PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS

ORDER NO.
ARP-654-0

FM/AM DIGITAL SYNTHESIZED TUNER
F-X700

FM/MW/LW DIGITAL SYNTHESIZED TUNER
F-X700L

MODELS F-X700 AND F-X700L COME IN SIX VERSIONS DISTINGUISHED AS FOLLOWS:

Model	Voltage	Remarks
F-X700/KU	AC120V only	U.S.A. model
F-X700/S	AC110V, 120V, 220V, 240V (switchable)	General export model
F-X700/S/G	AC110V, 120V, 220V, 240V (switchable)	U.S. Military model
F-X700/HEZ	AC220V, 240V (switchable)	West Germany model
F-X700L/HE	AC220V, 240V (switchable)	European continent model
F-X700L/HB	AC220V, 240V (switchable)	United Kingdom model

- This service manual is applicable to the KU, HB, HE, S and S/G types.
- As to the HB, HE, S and S/G types, please refer to pages 37—49.
- As to the HEZ type please refer to the additional service manual (ARP-656).
- The AM tuner of the F-X700L is a two wave-band tuner with MW (medium wave) and LW (long wave), but the F-X700 is MW only.
- Ce manual d'instruction se refére au mode de réglage, en français.
- Este manual de servicio trata del método de ajuste escrito en español.

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1. SAFETY INFORMATION 2
2. SPECIFICATIONS 3
3. FRONT PANEL FACILITIES 4
4. BLOCK DIAGRAM 6
5. CIRCUIT DESCRIPTIONS 8
6. PARTS LOCATION 16
7. EXPLODED VIEWS AND PARTS LIST 17
8. P.C. BOARDS CONNECTION DIAGRAM 19
9. SCHEMATIC DIAGRAM 23
10. ELECTRICAL PARTS LIST 27
11. PACKING 30
12. ADJUSTMENT 31
RÉGLAGE 33
AJUSTE 35
13. FOR S AND S/G TYPES 37
14. FOR HE AND HB TYPES 43

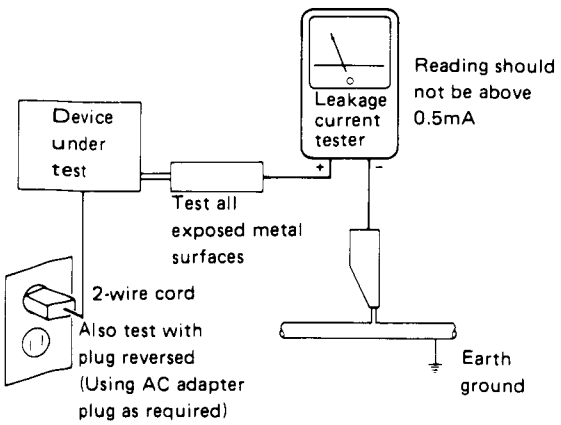
1. SAFETY INFOMATIONS

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by : Date :

Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

QUESTIONNAIRE

MODEL _____

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

1. SERVICING EVALUATION	Circle applicable number:	Good		Fair		Poor
a. Disassembly/Re-assembly:		1	2	3	*4	*5
b. Circuit Checks:		1	2	3	*4	*5
c. Replacement of Parts:		1	2	3	*4	*5
d. Adjustment (s):		1	2	3	*4	*5

* If (4) or (5) was circled, please be specific.

2. SPECIFICATIONS

FM Tuner Section

Frequency range ..... 87.5 MHz to 108 MHz
Usable Sensitivity ..... 11.2 dBf, IHF (1.0 μV/ 75 Ω)
Sensitivity (DIN) ..... Mono; 1.2 μV/75 Ω
Signal-to-Noise Ratio (at 85 dBf) ..... Mono; 80 dB
Stereo; 76 dB
Signal-to-Noise Ratio (DIN) ..... Mono; 71 dB
Stereo; 65 dB
Distortion ..... Stereo; 0.3% (1kHz)
Alternate Channel Selectivity ..... 62 dB (400 kHz)
Stereo Separation ..... 40 dB (1 kHz)
Frequency Response ..... 30 Hz to 15 kHz $^{+0.5}_{-1.0}$ dB
Antenna Input ..... 300 Ω balanced
75 Ω unbalanced

MW Tuner Section

Frequency range
When 10 kHz step ..... 530 kHz to 1,600 kHz
When 9 kHz step ..... 531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna) ..... 350 μV/m
Signal-to-Noise Ratio ..... 53 dB
Antenna ..... Loop Antenna

LW Tuner Section

Frequency range ..... 153 kHz to 281 kHz
Antenna ..... Loop antenna

Audio Section

Output Level
FM (100% MOD) ..... 650 mV
AM (30% MOD) ..... 150 mV

Miscellaneous

Power Requirements
HE and HEZ models ..... a.c. 220 Volts ∼, 50/60 Hz
HB model ..... a.c. 240 Volts ∼, 50/60 Hz
KU and KC models ..... AC 120 V, 60 Hz
S, SS and S/G models .....
AC 110/120/220/240 V (switchable) 50/60 Hz
Power Consumption
HE and HEZ models ..... 10 W
HB model ..... 10 W
KU and KC models ..... 10 W
S, SS and S/G models ..... 10 W
Dimensions ..... 320(W) x 60(H) x 217.5(D) mm
12-5/8(W) x 2-3/8(H) x 8-9/16(D) in
Weight (without package) ..... 2.4 kg(5 lb 5 oz)

Remote Control Unit

Power Supply ..... DC3V, SUM-3 (AA) type dry cell, 2
Remote Control System ..... Infrared control

Furnished Parts

Remote Control Unit (CU-X700) 1
FM T-Type Antenna 1
AM Loop Antenna (Large) 1
Pin plug connecting cord 1
Operating Instructions 1
AA Batteries (SUM-3; 1.5 V) 2

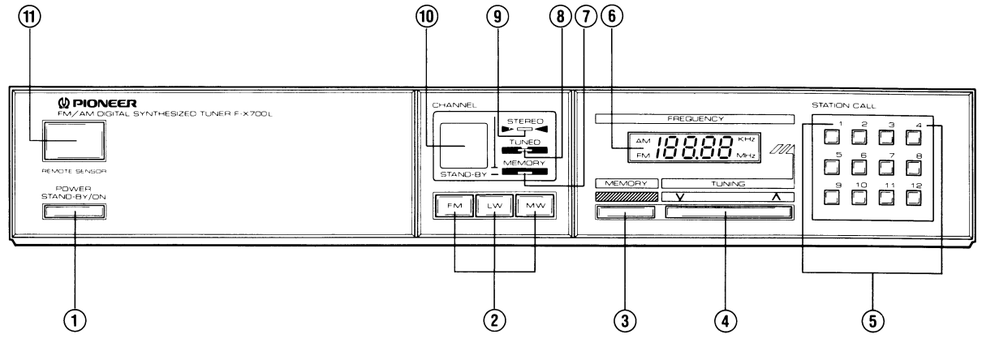
NOTE:
Specifications and design subject to possible modification without notice due to improvements.

Station Call Switch Memo

Use the form below to record the preset stations and their frequency as a reference.

S.C. Switch	1	2	3	4	5	6
Station Call Letters						
Broadcast Frequency						
S.C. Switch	7	8	9	10	11	12
Station Call Letters						
Broadcast Frequency						

3. FRONT PANEL FACILITIES



① POWER switch

When this switch is set to the ON position, power is supplied to the tuner's main circuits. The unit's POWER switch is geared to selecting the transformer's secondary and so even at the STAND-BY position, the unit's circuitry will work as long as the power cord is connected to power outlet. Disconnect the power cord from the power outlet when you do not plan to use the unit for a long period of time.

② FUNCTION switches

These are used to select either the FM, MW or LW broadcasting bands.
FM: Push to receive FM band broadcasts.
MW: Push to receive MW band broadcasts.
LW: Push to receive LW band broadcasts.

- When either the FUNCTION switch or the station call switch is pressed, power is automatically turned on.

③ MEMORY switch

This is used to memorize stations. When the switch is depressed, the MEMORY indicator will light. To memorize the frequency of any station, press the STATION CALL switch while the MEMORY indicator is lighting up.

④ TUNING switch

This is used to locate stations. Push the left half of this switch " ∨ " to locate a station broadcasting on a lower frequency and the right half of this switch " ∧ " to locate a station broadcasting on a higher frequency.

⑤ STATION CALL switches

These are used to preset and recall broadcasting stations thereby eliminating the necessity of using the TUNING switch to locate your favorite stations.

⑥ FREQUENCY display

This shows the frequency of the station currently being received in digital form. The FM band is indicated by MHz, and the AM band by kHz

NOTE:
AM band refers to the combined MW and LW bands.

⑦ MEMORY Stand-by indicator

When the MEMORY switch is pressed, this indicator lights yellow. When a signal from the remote control unit is received, it flashes red.
It lights red steadily when the tuner is in the STAND-BY mode.

⑧ TUNED (Tuning indicator)

This indicator lights up when a broadcast is received.

⑨ FM STEREO indicator

This lights when a stereo program has been picked up during an FM broadcast.

⑩ Preset Number Display

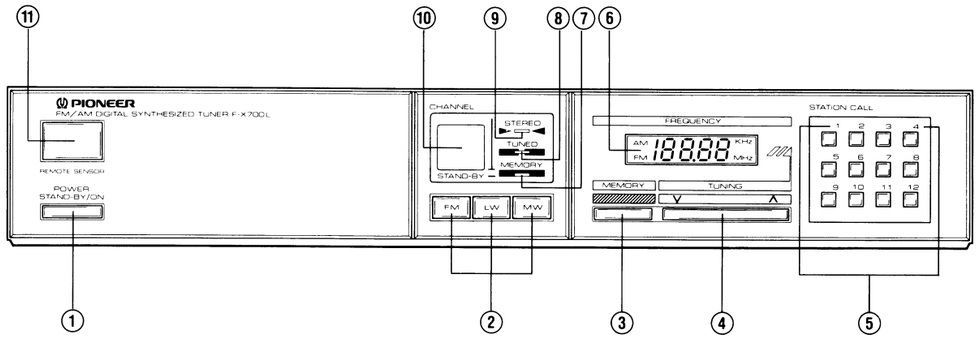
Displays number of STATION CALL switch pressed.

⑪ Remote Control Sensor

Aim the remote control at the sensor when using.

NOTE:
- *Do not expose the sensor to strong light sources.*
- *Operate the remote control in front of the tuner in a position from which the sensor is visible.*
- *Do not use at the same time as other wireless remote control devices for other equipment.*
- *Use within a range of approximately 6 meters.*

3. FRONT PANEL FACILITIES



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- *Operate the remote control in front of the tuner in a position from which the sensor is visible.*
- *Do not use at the same time as other wireless remote control devices for other equipment.*
- *Use within a range of approximately 6 meters.*

POWER switch
Use to turn power to STAND-BY and ON.

AMP section
Use to control equipment connected to the VIDEO/AUX terminals on the back of the amplifier and to set the amplifier switch to the VIDEO/AUX position.

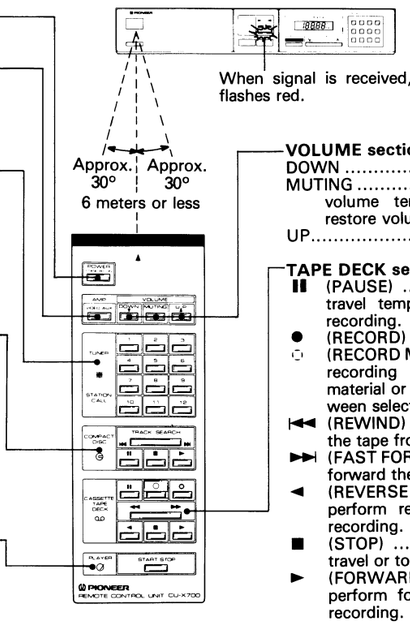
STATION CALL section
Use when listening to radio broadcasts. (For calling stations preset with the tuner's station call switches.)

* *When any of these switches are pressed, power will automatically be turned on.*

COMPACT DISC section
TRACK SEARCH ... Use to locate the start of selections you wish to hear. When designating selection numbers, pressing the "▶▶| " side will move up in order and the "|◀◀ " side will move down in order.
▮▮ (Pause) ..... Press to temporarily halt playback.
■ (Stop) .....Press to stop playback.
▶ (Play) ..... Press to begin playback.

PLAYER (Turntable) section
START/STOP ..... Use to start or stop playback of a record.

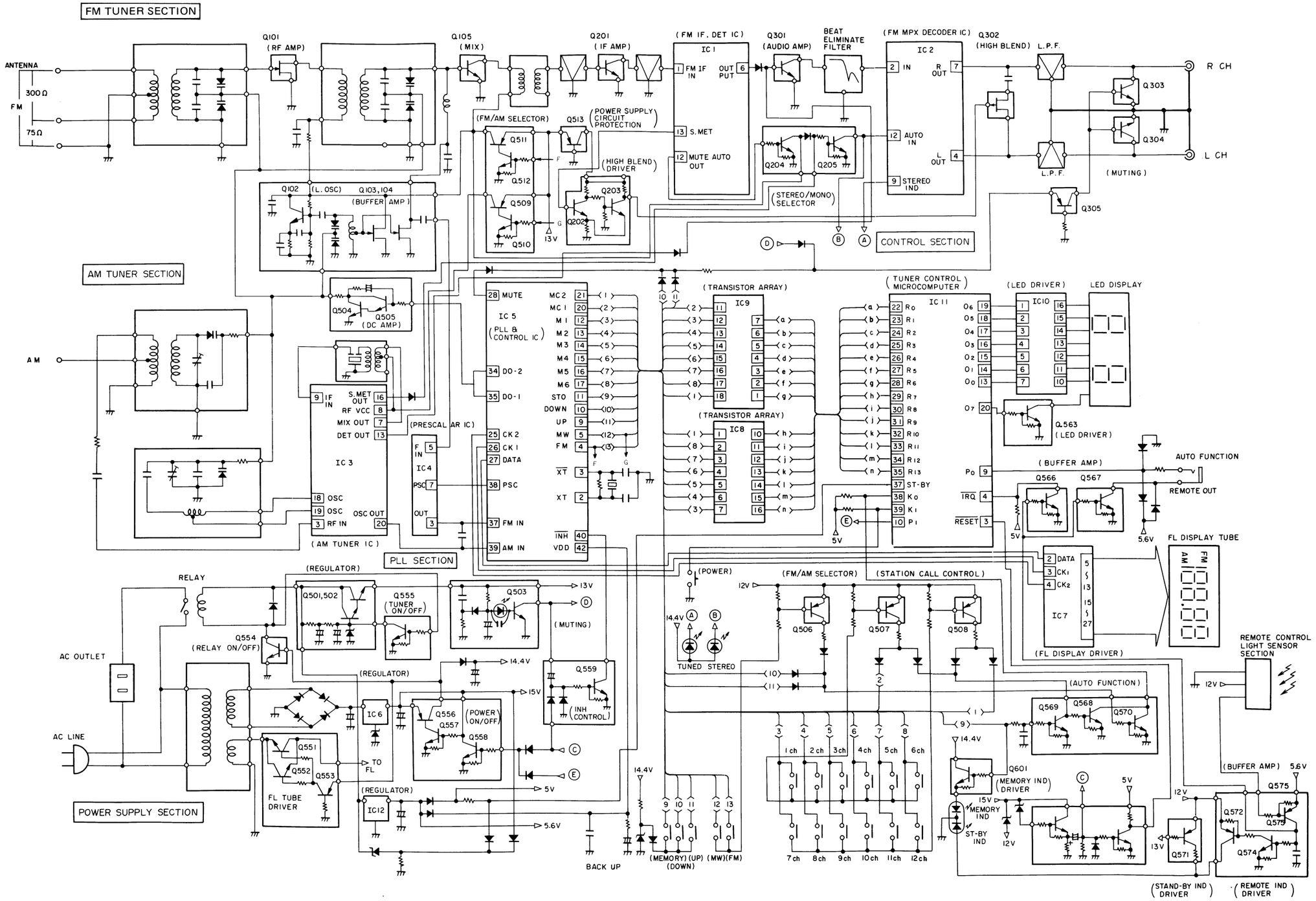
NOTE:
More than one remote control switch must not be pressed at the same time.



VOLUME section
DOWN ..... Press to reduce volume.
MUTING ..... Press once to reduce volume temporarily. Press again to restore volume to original level.
UP..... Press to increase volume.

TAPE DECK section
▮▮ (PAUSE) ..... Press to stop tape travel temporarily during playback or recording.
● (RECORD) ..... Press to record.
(RECORD MUTE) ..... Press during recording to eliminate unwanted material or to create blank intervals between selections.
|◀◀ (REWIND) ..... Press to rewind the tape from right to left.
▶▶| (FAST FORWARD) ..... Press to fast forward the tape from left to right.
◀ (REVERSE PLAYBACK) ..... Press to perform reverse-direction playback or recording.
■ (STOP) ..... Press to stop tape travel or to release recording mode.
▶ (FORWARD PLAYBACK) ..... Press to perform forward-direction playback or recording.

4. BLOCK DIAGRAM



5. CIRC

5.1 OUTLINE

FM Front-end

The FM fr
stage RF amp
cuit, a base-in
capacitance d
variable capac

FM IF Amplif

A single am
two dual-elem
IC (PA3001-A
the S/N ratio.

Stereo Decode

An MPX de
demodulation
previous stage
is used to su
leakage. Unwa
high-blend cir
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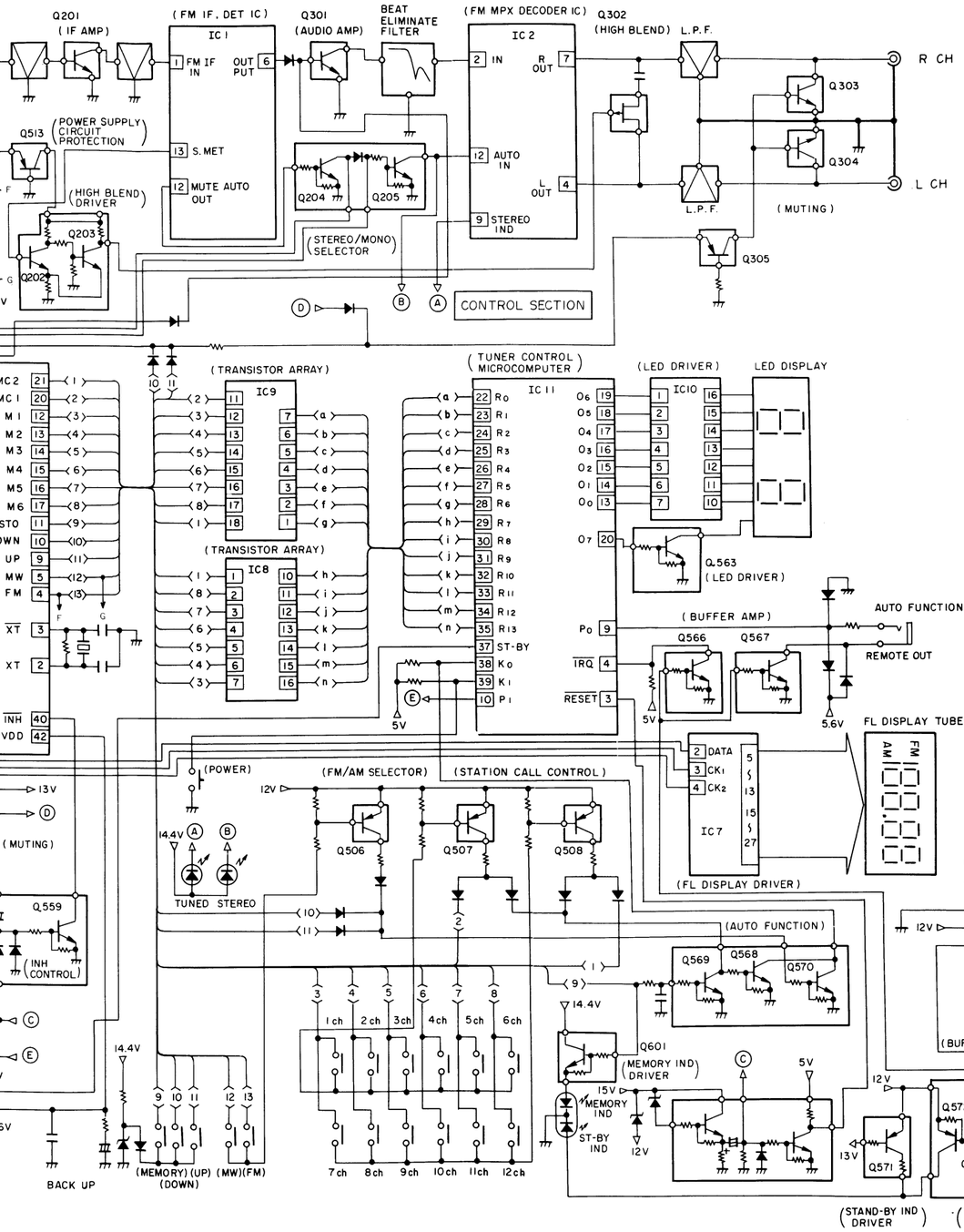


5. CIRCUIT DESCRIPTIONS

5.1 OUTLINE OF SIGNAL PATH

FM Front-end

The FM front-end consists of an FET single-stage RF amplifier, a buffered local oscillator circuit, a base-injected mixer, and features a variable capacitance diode equivalent to a three-ganged variable capacitor in the tuning circuit.

FM IF Amplifier/Detector

A single amplifier transistor is inserted between two dual-element ceramic filters, and an IF system IC (PA3001-A) is used in the next stage to improve the S/N ratio.

Stereo Decoder

An MPX decoder IC (HA12016) is employed in demodulation with an beat eliminate filter in the previous stage. And an LPF in the following stage is used to suppress birdie noise and pilot signal leakage. Unwanted noise is suppressed by an auto high-blend circuit when a weak input signal is received.

AM Tuner

A variable capacitance diode equivalent to a two-ganged variable capacitor is used in the tuning circuit, and LA1247 is used as the AM tuner IC to achieve better sensitivity.

PLL Synthesizer Stage

The synthesizer stage includes a PLL & controller IC (TC9157AP) connected to a prescalar IC (TD6104P) to control the tuner and the FL display section.

Control Stage

The F-X700 has been equipped with a 4-bit microcomputer IC (PD6026) to control the power supply, the remote control and auto functions, the LED numerical display, and the stand-by feature. This IC is also used in the control of the tuner in combination with the TC9157AP.

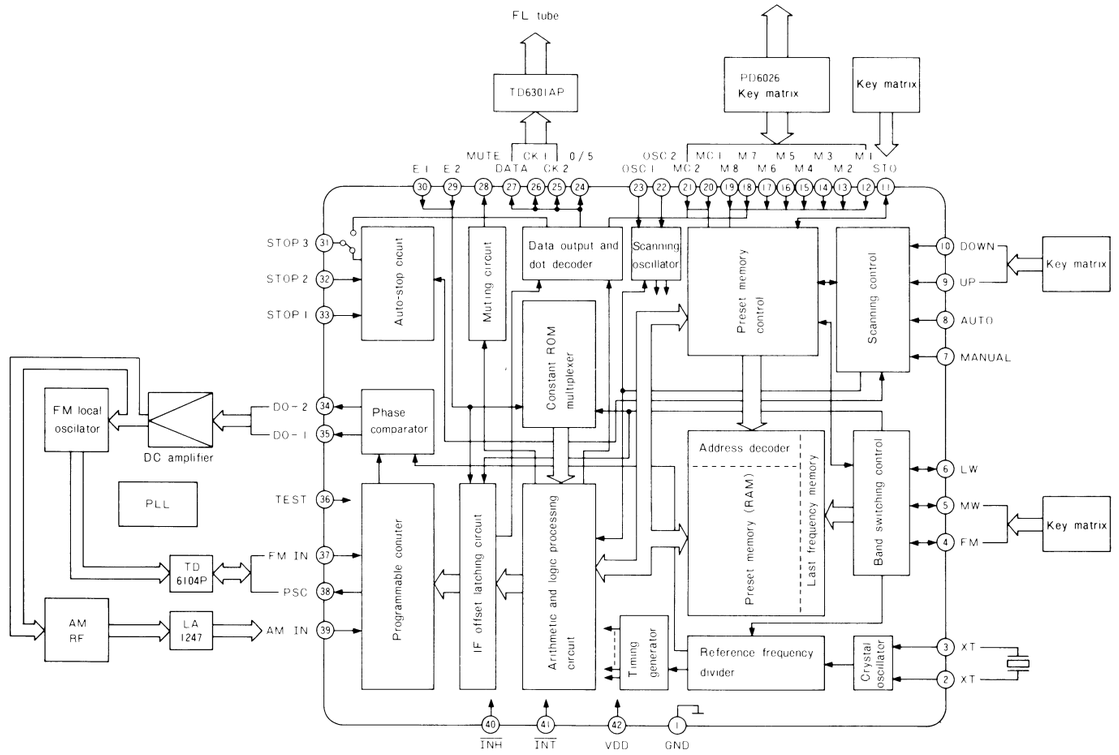
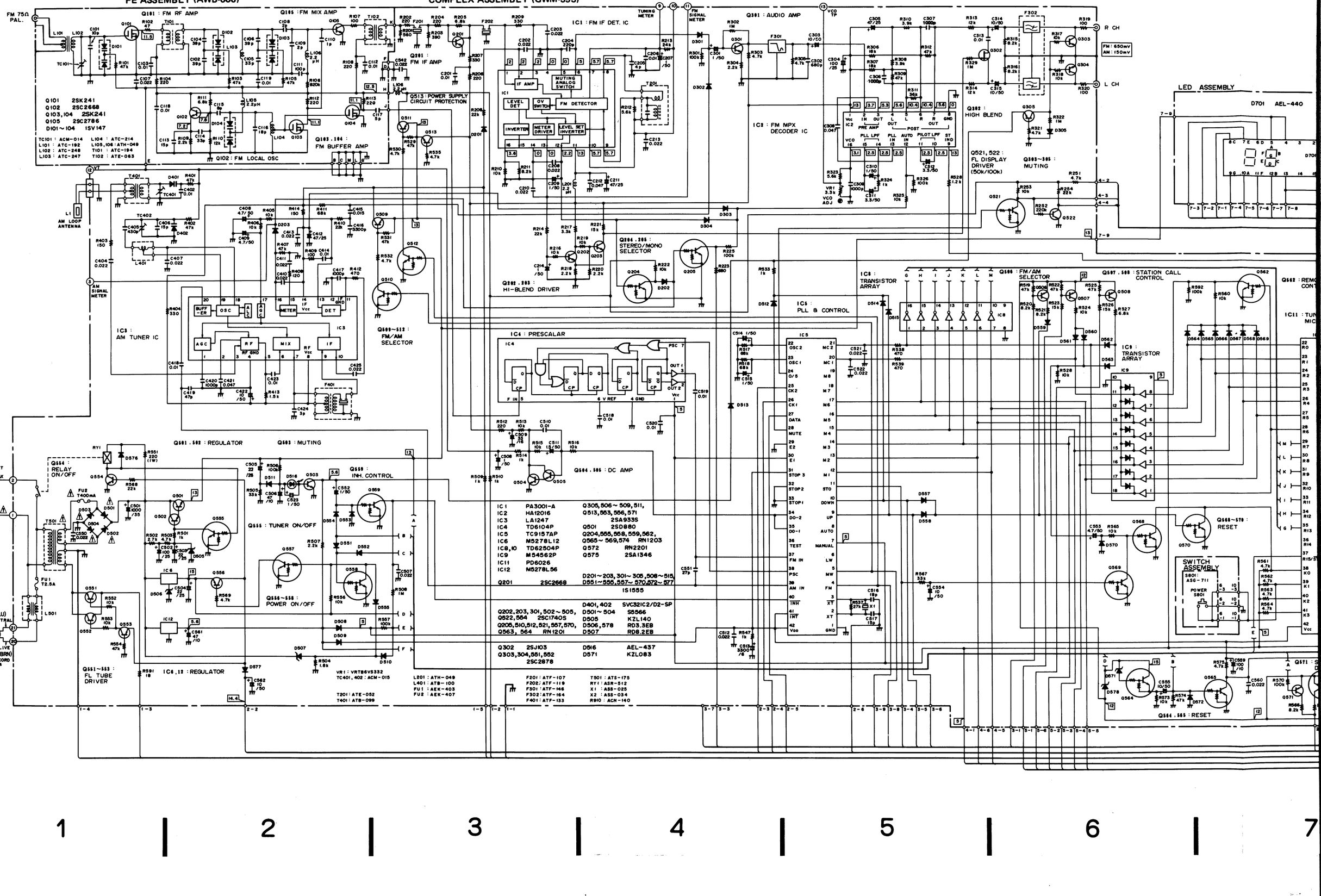


Fig. 5-1 TC9157AP Block Diagram

SCHEMATIC DIAGRAM



4 5 6 7 8 9

A B C D

ASSEMBLY (GWM-393)

IC1 : FM IF DET. IC

IC2 : FM MPX DECODER IC

Q301 : AUDIO AMP

Q302 : HIGH BLEND

Q521, 522 : FL DISPLAY DRIVER (50k/100k)

Q303~305 : MUTING

Q204, 205 : STEREO/MONO SELECTOR

Q202, 203 : HI-BLEND DRIVER

IC4 : PRESCALAR

IC5 : PLL & CONTROL

IC8 : TRANSISTOR ARRAY

IC9 : TRANSISTOR ARRAY

Q506 : FM/AM SELECTOR

Q507, 508 : STATION CALL CONTROL

Q562 : REMOTE STATION CONTROL

IC11 : TUNER CONTROL MICRO COMPUTER

Q563 : LED DRIVER

IC10 : LED DRIVER

Q504, 505 : DC AMP

Q568~570 : RESET

Q564, 565 : RESET

Q571 : STAND-BY IND DRIVER

Q572, 574 : REMOTE IND. DRIVER

Q566, 567, 575 : BUFFER AMP

SWITCH ASSEMBLY
S801: ASG-711
POWER S801

REMOTE CONTROL LIGHT SENSOR AXX-009

LED ASSEMBLY

D701 AEL-440

DISPLAY ASSEMBLY (GWY-150)

V1 AAV-023
IC7 TD6301AP
Q601 RN1201
D601 1S1555
D602 KZL056
D603 AEL-424
D604 AEL-382
D605 AEL-357
S601~617 : ASG-711
R613 : RA12S473J

Q601 : MEMORY IND. DRIVER

IC1 : FL DISPLAY DRIVER

1. RESISTORS.
Indicated in Ω, ¼W, ½ W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT.
; DC voltage (V) at no input signal
mV; Signal voltage at FM 400Hz ± 75kHz DEV.

4. OTHERS:
; Signal route.
; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES:

S601	STATION CALL 1	ON—OFF	
S602	STATION CALL 2	ON—OFF	
S603	STATION CALL 3	ON—OFF	
S604	STATION CALL 4	ON—OFF	
S605	STATION CALL 5	ON—OFF	
S606	STATION CALL 6	ON—OFF	
S607	STATION CALL 7	ON—OFF	
S608	STATION CALL 8	ON—OFF	
S609	STATION CALL 9	ON—OFF	
S610	STATION CALL 10	ON—OFF	
S611	STATION CALL 11	ON—OFF	
S612	STATION CALL 12	ON—OFF	
S613	MEMORY	ON—OFF	
S614	DOWN	ON—OFF	
S615	UP	ON—OFF	
S616	AM	ON—OFF	
S617	FM	ON—OFF	
S801	POWER ON/STAND-BY	ON—STAND-BY	

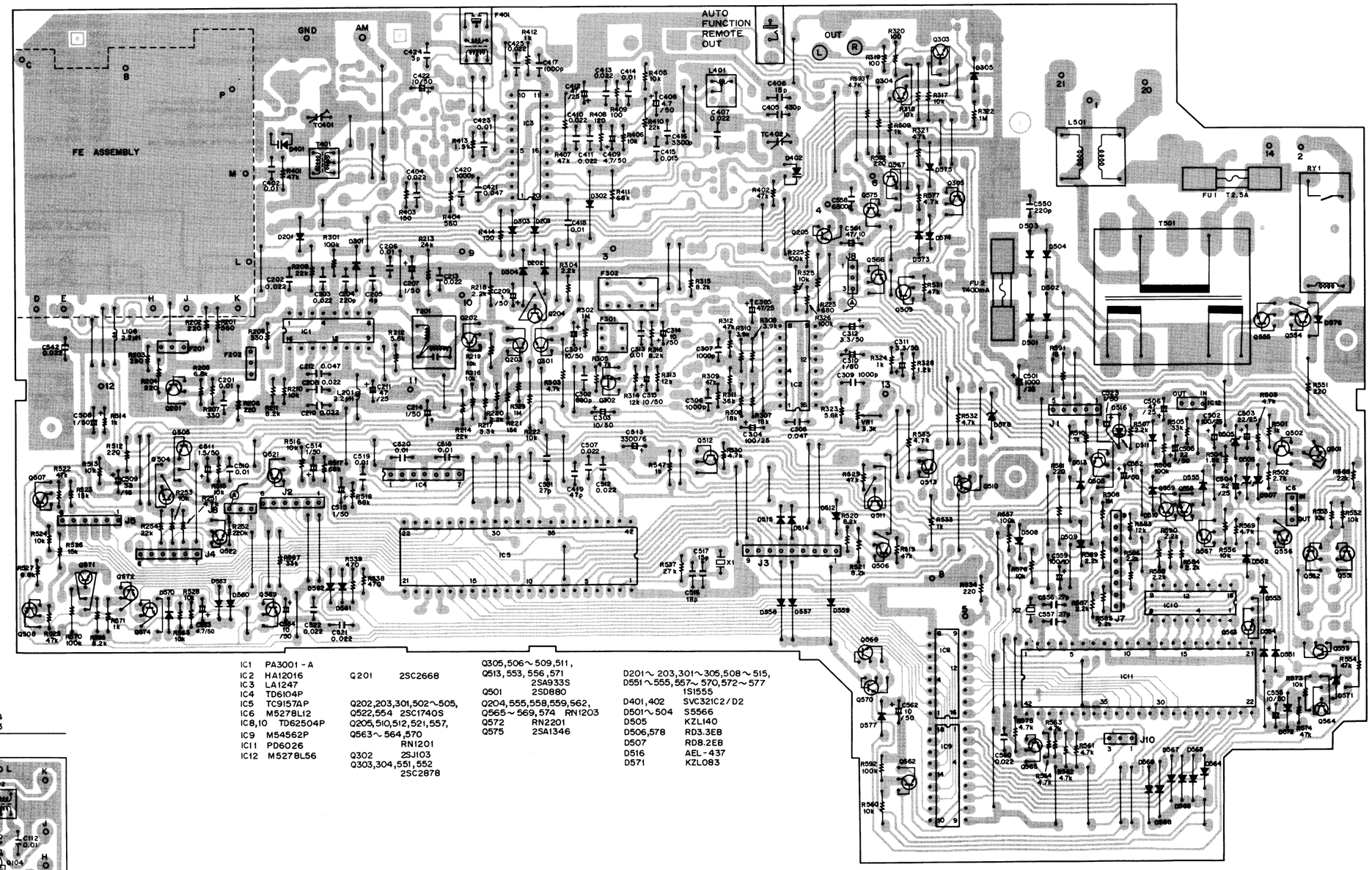
The underlined indicates the switch position.

IC1	PA3001-A	Q305,506~509,511,	
IC2	HA12016	Q513,553,556,571	
IC3	LA1247	2SA933S	
IC4	TD6104P	Q501 2SD880	
IC5	TC9157AP	Q204,555,558,559,562,	
IC6	M5278L12	Q565~569,574 RN1203	
IC8,10	TD62504P	Q572 RN2201	
IC9	M54562P	Q575 2SA1346	
IC11	PD6026		
IC12	M5278L56		
Q201	2SC2668	D201~203,301~305,508~515,	
		D551~555,557~570,572~577	
		1S1555	
		D401,402 SVC321C2/D2-SP	
Q202,203,301,502~505,		D501~504 S5566	
Q522,564	2SC1740S	D505 KZL140	
Q205,510,512,521,557,570,		D506,578 RD3.3EB	
Q563, 564	RN1201	D507 RD8.2EB	
Q302	2SJ103	D516 AEL-437	
Q303,304,551,552	2SC2878	D571 KZL083	

F201 : ATF-107
F202 : ATF-119
F501 : ATF-146
F302 : ATF-164
F401 : ATF-133
T501 : ATS-175
RY1 : ASR-512
X1 : ASS-025
X2 : ASS-034
R910 : ACM-140

P.C. BOARD PATTERNS

Complex Assembly
(GWM-393)



IC1 PA3001 - A
IC2 HA12016
IC3 LA1247
IC4 TD6104P
IC5 TC9157AP
IC6 M5278L12
IC8,10 TD62504P
IC9 M54562P
IC11 PD6026
IC12 M5278L56

Q201 2SC2668

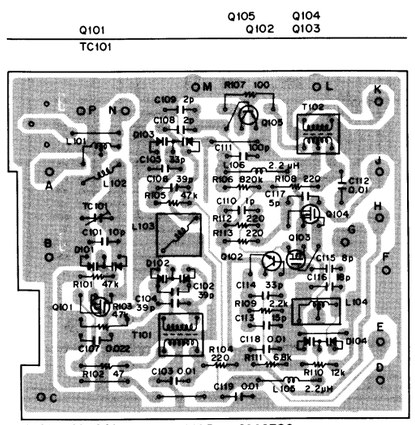
Q202,203,301,502~505, Q522,554 2SC1740S
Q205,510,512,521,557, Q563~564,570 RN1201

Q302 2SJ103
Q303,304,551,552 2SC2878

Q305,506~509,511, Q513,553,556,571 2SA933S
Q501 2SD880
Q204,555,558,559,562, Q565~569,574 RN1203
Q572 RN2201
Q575 2SA1346

D201~203,301~305,508~515, D551~555,557~570,572~577 1SI555
D401,402 SVC321C2/D2
D501~504 S5566
D505 KZL140
D506,578 RD3.3EB
D507 RD8.2EB
D516 AEL-437
D571 KZL083

FE Assembly
(AWB-060)



Q101 2SK241
Q102 2SC2668
Q103,104 2SK241

Q105 2SC2786
D101~104 1SV147

3 | 4 | 5 | 6

Assembly
(3)

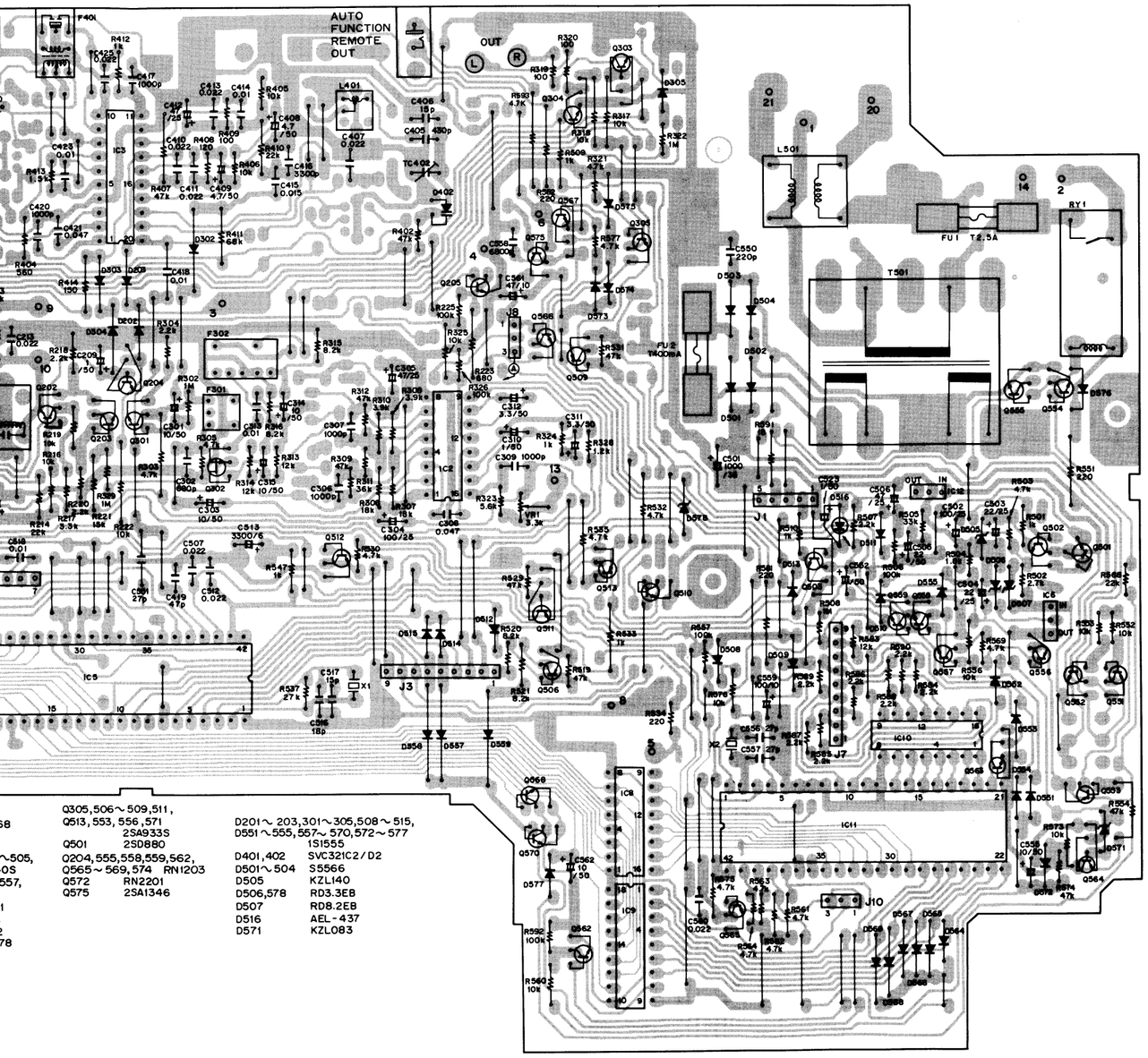
IC5 Q202 IC3 Q204 Q203,301 Q302 Q512 IC2 TC402 Q205 Q304 Q303 Q575,567 Q305 Q566 Q509 Q511 Q513 Q510 Q568,506 IC8 IC9 Q570 Q562 Q565 IC11 Q503 IC12 Q559,558,557 IC10 Q555 Q554 Q502 Q501 IC6 Q556 Q552 Q551 Q553 Q563 Q564

A

B

C

D

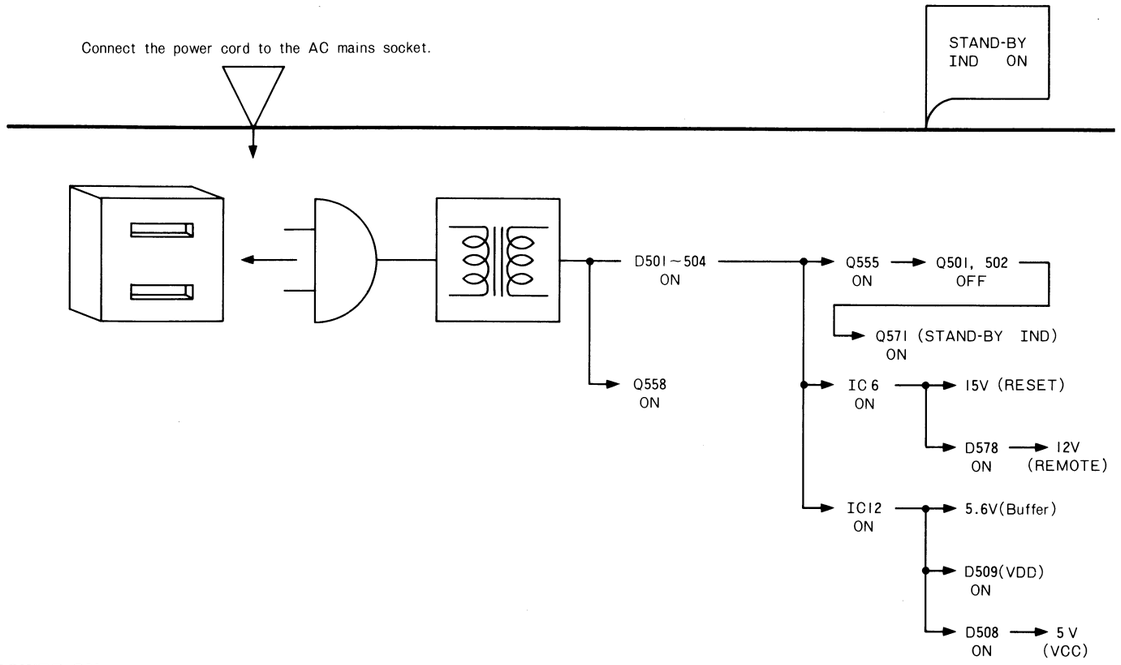


Q305,506～509,511,
Q513,553,556,571 2SA933S
Q501 2SD880
Q204,555,558,559,562,
Q565～569,574 RN1203
Q572 RN2201
Q575 2SA1346

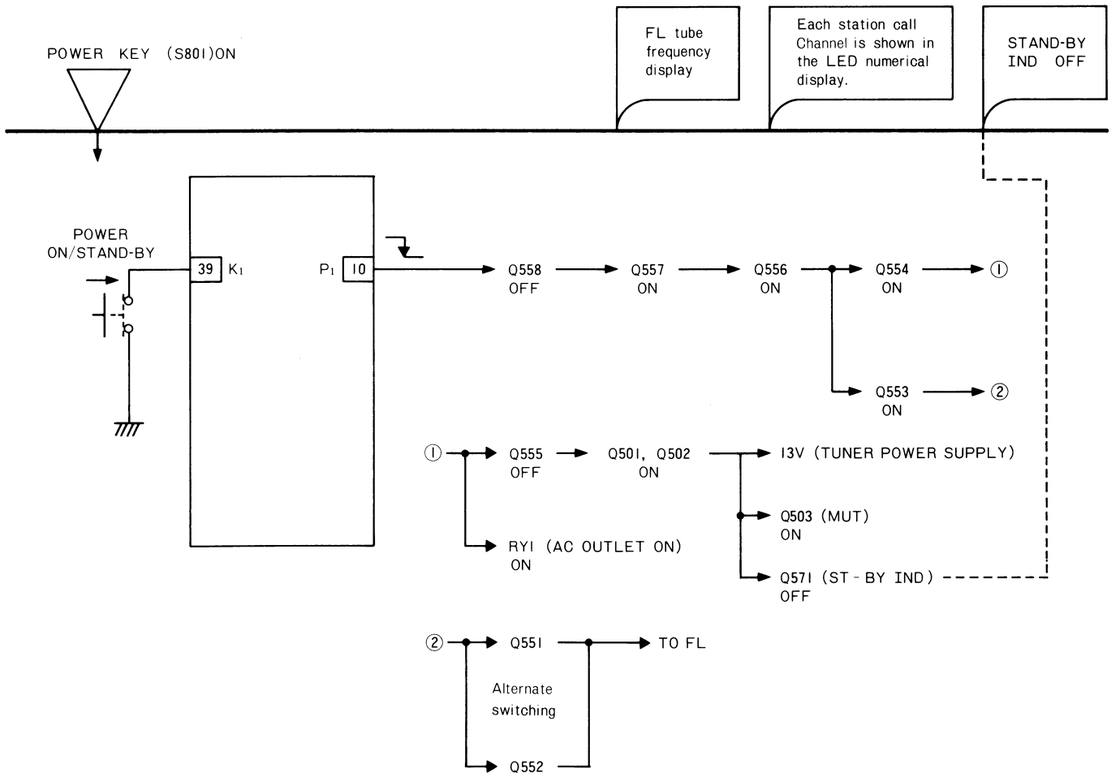
D201～203,301～305,508～515,
D551～555,557～570,572～577 1S1555
D401,402 SVC321C2/D2
D501～504 S5566
D505 KZL140
D506,578 RD3.3EB
D507 RD8.2EB
D516 AEL-437
D571 KZL083

3 | 4 | 5 | 6

CONNECT THE POWER CORD TO THE AC MAINS SOCKET



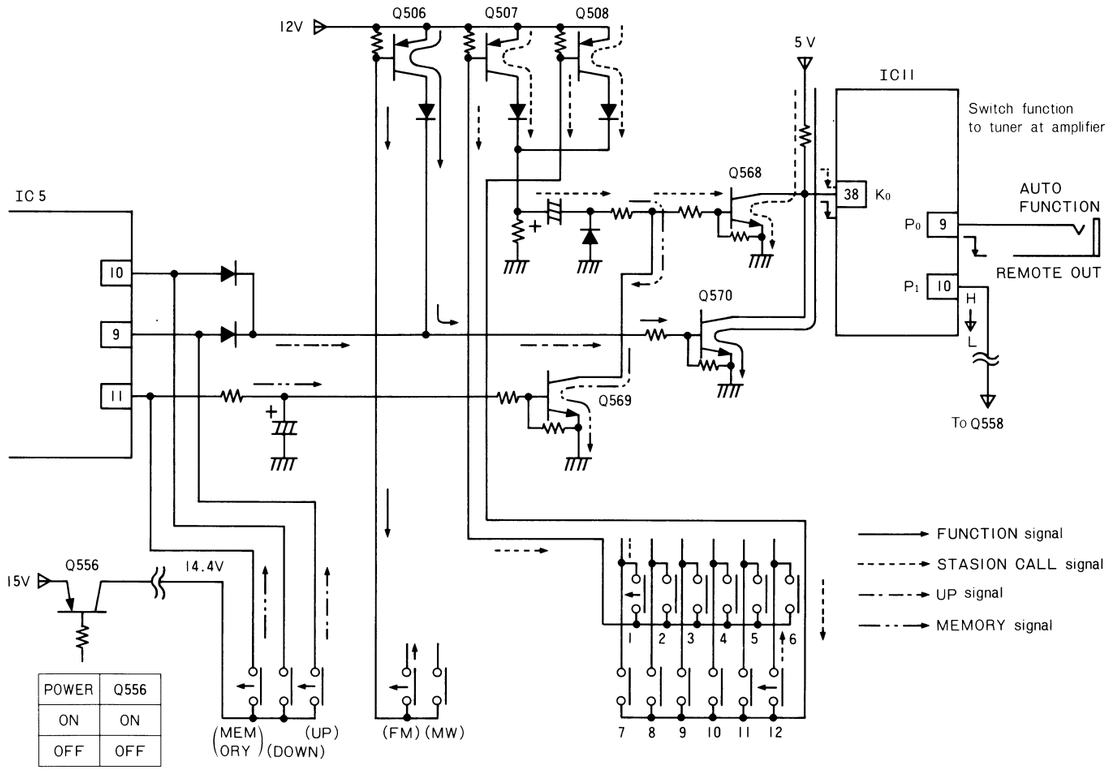
POWER ON



Automatic Tuner Switching Terminal

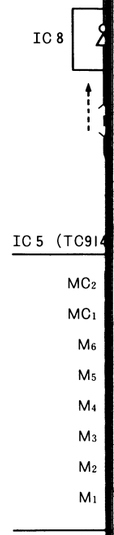
The automatic switching terminal is an output terminal to be connected to the A-X700 to permit automatic switching of tuner, amplifier, turntable, compact disk, and cassette deck by remote control. An auto-function signal is generated automatically when a tuner function key (FM or AM), a station call key (channel 1 thru 12), or a tuning key (∧or∨) is pressed, resulting in the amplifier function being switched automatically to the tuner.

AUTO FUNCTION AND ONE TOUCH POWER ON



- Auto-function is not activated when Q569 is turned on during memory mode and a station call key is pressed.
- When POWER is switched off by "one-touch" power switching, Q556 is turned off and no voltage is supplied to the UP and DOWN keys. Hence, the power is not switched on when the UP or DOWN key is pressed in this condition.

LED NUME



ex 3ch si

ex 12ch si

KEY	
ch	MC1
1	H
2	H
3	H
4	H
5	H
6	H
7	L
8	L
9	L
10	L
11	L
12	L

STAND-BY
IND ON

01, 502
OFF

ND-BY IND)

15V (RESET)

D578 → 12V
ON (REMOTE)

5.6V(Buffer)

D509(VDD)
ON

D508 → 5 V
ON (VCC)

STAND-BY
IND OFF

①

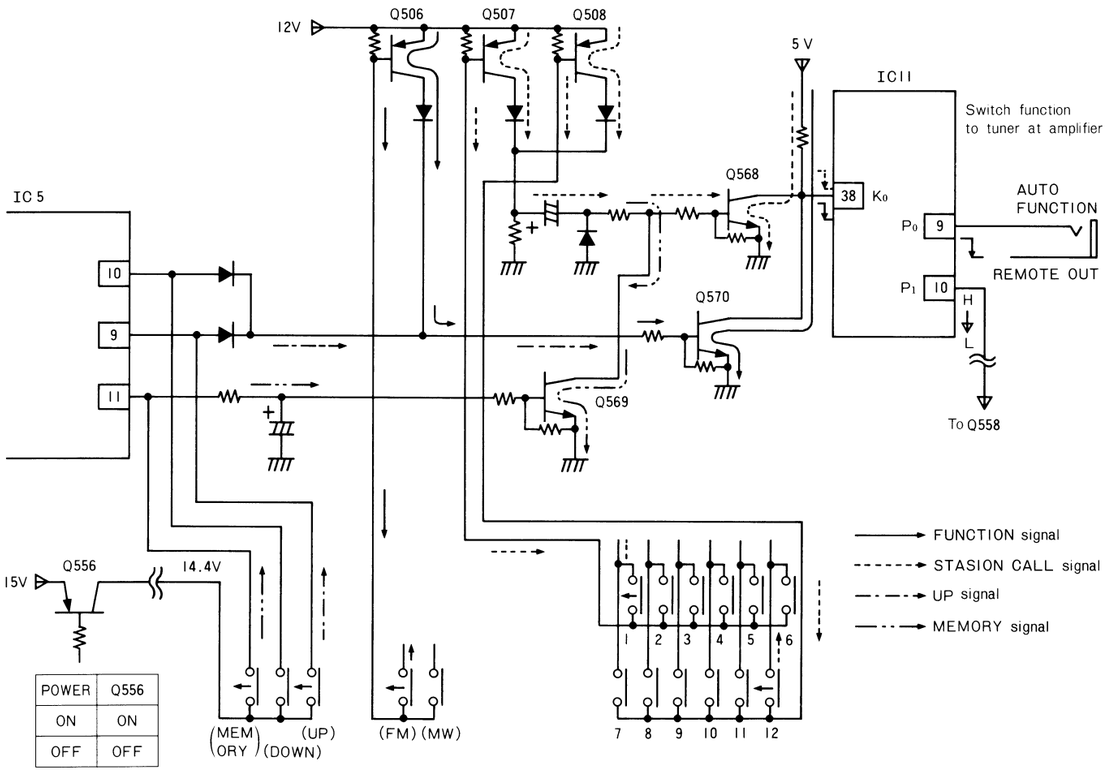
②

SUPPLY)

Automatic Tuner Switching Terminal

The automatic switching terminal is an output terminal to be connected to the A-X700 to permit automatic switching of tuner, amplifier, turntable, compact disk, and cassette deck by remote control. An auto-function signal is generated automatically when a tuner function key (FM or AM), a station call key (channel 1 thru 12), or a tuning key (∧or∨) is pressed, resulting in the amplifier function being switched automatically to the tuner.

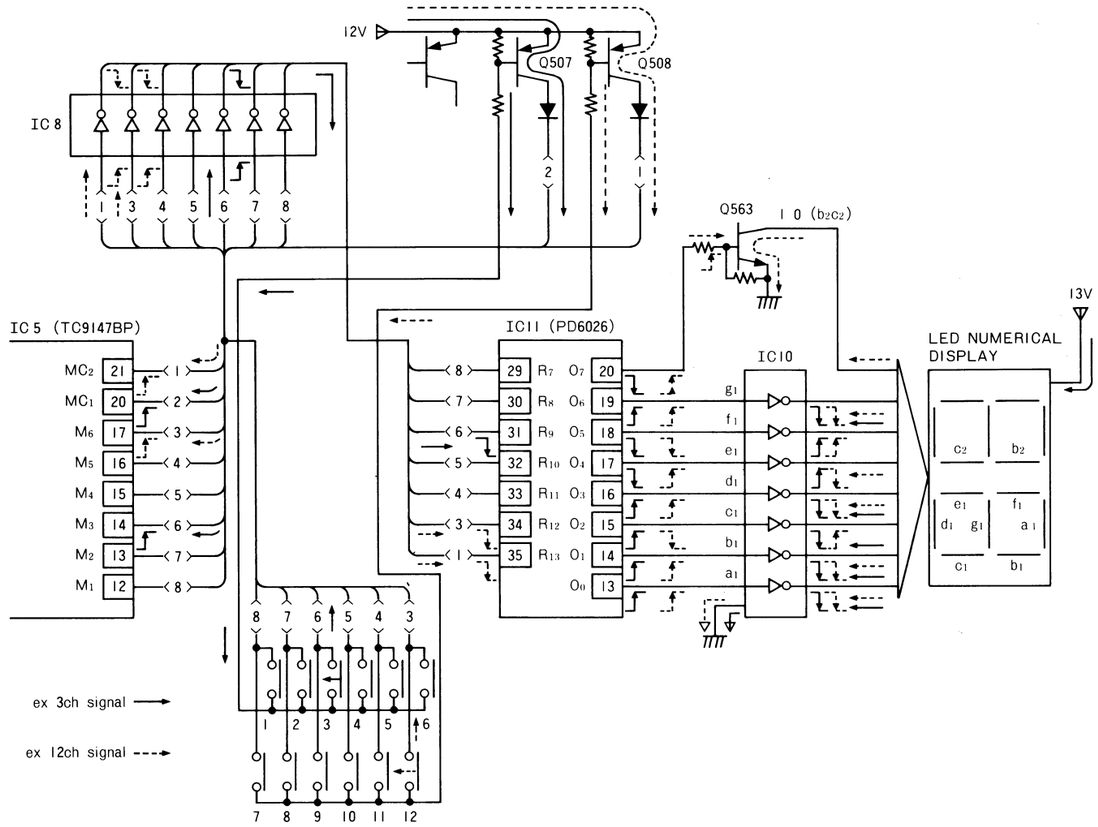
AUTO FUNCTION AND ONE TOUCH POWER ON



POWER	Q556
ON	ON
OFF	OFF

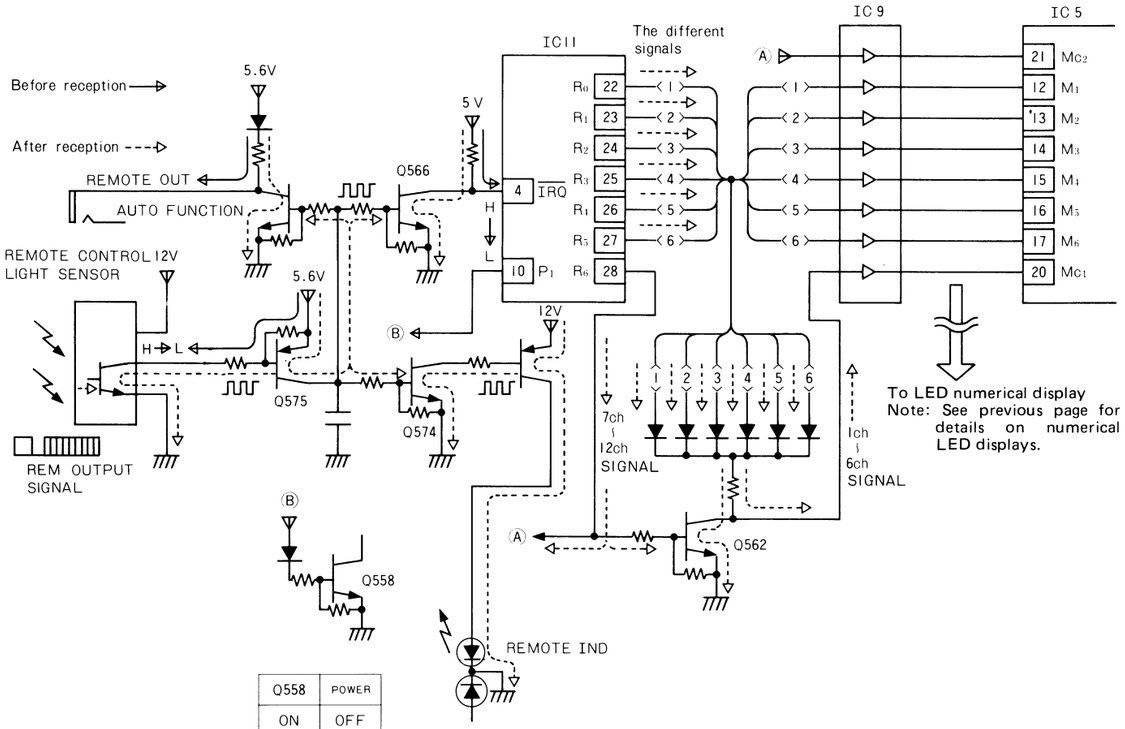
- Auto-function is not activated when Q569 is turned on during memory mode and a station call key is pressed.
- When POWER is switched off by "one-touch" power switching, Q556 is turned off and no voltage is supplied to the UP and DOWN keys. Hence, the power is not switched on when the UP or DOWN key is pressed in this condition.

LED NUMERICAL DISPLAY



KEY	TC9157AP								PD6026																LED DIS-PLAY
ch	MC_1	MC_2	M_1	M_2	M_3	M_4	M_5	M_6	R_7	R_8	R_9	R_{10}	R_{11}	R_{12}	R_{13}	O_0	O_1	O_2	O_3	O_4	O_5	O_6	O_7	
1	H	L	H	L	L	L	L	L	L	H	H	H	H	H	H	L	H	H	L	L	L	L	L	1
2	H	L	L	H	L	L	L	L	H	L	H	H	H	H	H	H	H	L	H	H	L	H	L	2
3	H	L	L	L	H	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	H	L	3
4	H	L	L	L	L	H	L	L	H	H	H	L	H	H	H	L	H	H	L	L	H	H	L	4
5	H	L	L	L	L	L	H	L	H	H	H	H	L	H	H	H	L	H	H	L	H	H	L	5
6	H	L	L	L	L	L	L	H	H	H	H	H	H	L	H	H	L	H	H	H	H	H	L	6
7	L	H	H	L	L	L	L	L	L	H	H	H	H	H	L	H	H	H	L	L	L	L	L	7
8	L	H	L	H	L	L	L	L	H	L	H	H	H	H	L	H	H	H	H	H	H	H	L	8
9	L	H	L	L	H	L	L	L	H	H	L	H	H	H	L	H	H	H	H	L	H	H	L	9
10	L	H	L	L	L	H	L	L	H	H	H	L	H	H	L	H	H	H	H	H	H	L	H	10
11	L	H	L	L	L	L	H	L	H	H	H	H	L	H	L	L	H	H	L	L	L	L	H	11
12	L	H	L	L	L	L	L	H	H	H	H	H	H	L	L	H	H	L	H	H	L	H	H	12

STATION CALL SWITCHING BY REMOTE CONTROL

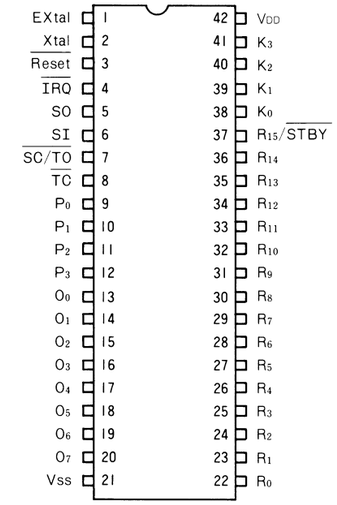


Q558	POWER
ON	OFF
OFF	ON

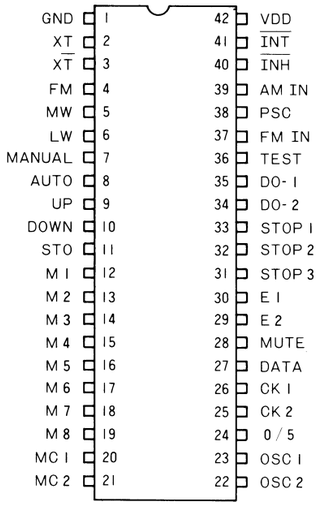
REMOTE CONTROLLER	PD6026								LED
ch	$\overline{IRQ}$	R_0	R_1	R_2	R_3	R_4	R_5	R_6	DISPLAY
1	L	H	L	L	L	L	L	L	1
2	L	L	H	L	L	L	L	L	2
3	L	L	L	H	L	L	L	L	3
4	L	L	L	L	H	L	L	L	4
5	L	L	L	L	L	H	L	L	5
6	L	L	L	L	L	L	H	L	6
7	L	H	L	L	L	L	L	H	7
8	L	L	H	L	L	L	L	H	8
9	L	L	L	H	L	L	L	H	9
10	L	L	L	L	H	L	L	H	10
11	L	L	L	L	L	H	L	H	11
12	L	L	L	L	L	L	H	H	12

POWER	$\overline{IRQ}$	P_1
ON	L	L
OFF	L	H

*Note: See the remote control circuit description on page 15 for details on the REM output.



PD6026



TC9157AP

PD6026 pin description

Pin No.	Pin Name	Input/ Output	Description
1	EXtal	Input	3.84 MHz resonator connected between pins.
2	Xtal	Input	
3	$\overline{Reset}$	Input	Reset input
4	$\overline{IRQ}$	Input	Remote control signal input pin
5	S_0	Output	NC
6	S_1	Input	
7	$\overline{SC/TO}$	Input/output	
8	$\overline{TC}$	Input	
9	P_0	Output	Auto-function signal output
10	P_1	Output	Power switch control signal output ON/OFF
11	P_2	Output	NC
12	P_3	Output	
13	O_0	Output	Station indicator output: 7-segment LED, 1 column, a
14	O_1	Output	b
15	O_2	Output	c
16	O_3	Output	d
17	O_4	Output	e
18	O_5	Output	f
19	O_6	Output	g
20	O_7	Output	10 column
21	Vss	——	GND
22	R_0	Input/output	DTS-8 interface: Output
23	R_1	Input/output	
24	R_2	Input/output	
25	R_3	Input/output	
26	R_4	Input/output	
27	R_5	Input/output	
28	R_6	Input/output	
29	R_7	Input/output	DTS-8 interface: Input
30	R_8	Input/output	
31	R_9	Input/output	
32	R_{10}	Input/output	
33	R_{11}	Input/output	
34	R_{12}	Input/output	
35	R_{13}	Input/output	
36	R_{14}	Input/output	NC
37	$\overline{ST\text{-}BY}$	Input	Back-up mode start input
38	K_0	Input	Auto-function trigger input
39	K_1	Input	Power switch input
40	K_2	Input	NC
41	K_3	Input	
42	VDD	——	5V

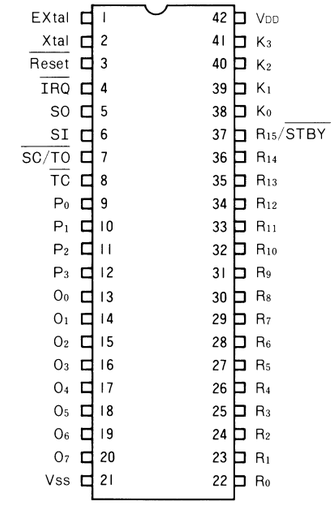
TC9157AP Pin

Pin No.	Pin Name
2	XT
3	$X\overline{T}$
4	FM
5	MW
6	LW
7	MANUA
8	AUTO
9	UP
10	DOWN
11	STO
12 (~ 19)	M1 (~ M8)
20	MC1
21	MC2
22	OSC2
23	OSC1
24	0/5
25	CK2
26	CK1
27	DATA
28	MUTE
29	E2
30	E1
31	STOP3
32	STOP2
33	STOP1
34	DO-2
35	DO-1
36	TEST
37	FM IN
38	PSC
39	AM IN
40	$\overline{INH}$
41	$\overline{INT}$
42	VDD
1	GND

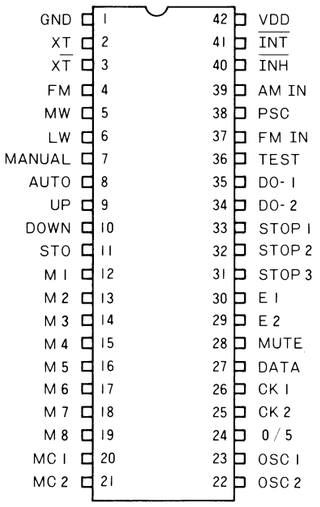
IC 5

21	M_{C2}	
12	M_1	
13	M_2	
14	M_3	
15	M_4	
16	M_5	
17	M_6	
20	M_{C1}	

erical display
previous page for
on numerical
isplays.



PD6026


GND 1 42 VDD
XT 2 41 INT
XT 3 40 INH
FM 4 39 AM IN
MW 5 38 PSC
LW 6 37 FM IN
MANUAL 7 36 TEST
AUTO 8 35 DO-1
UP 9 34 DO-2
DOWN 10 33 STOP1
STO 11 32 STOP2
M1 12 31 STOP3
M2 13 30 E1
M3 14 29 E2
M4 15 28 MUTE
M5 16 27 DATA
M6 17 26 CK1
M7 18 25 CK2
M8 19 24 0/5
MC1 20 23 OSC1
MC2 21 22 OSC2

t description
EM output.

TC9157AP

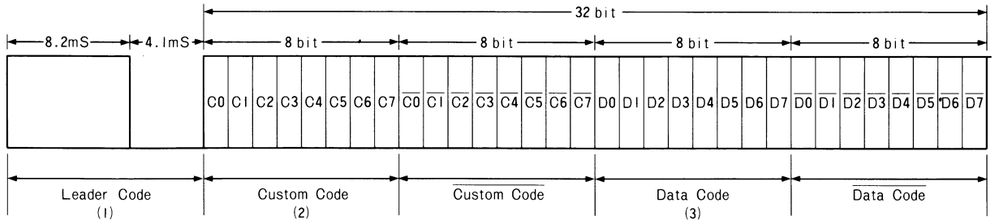
PD6026 pin description

Pin No.	Pin Name	Input/ Output	Description
1	EXtal	Input	3.84 MHz resonator connected between pins.
2	Xtal	Input	
3	$\overline{Reset}$	Input	Reset input
4	$\overline{IRQ}$	Input	Remote control signal input pin
5	S_0	Output	NC
6	S_1	Input	
7	$\overline{SC}/\overline{TO}$	Input/output	
8	$\overline{TC}$	Input	
9	P_0	Output	Auto-function signal output
10	P_1	Output	Power switch control signal output ON/OFF
11	P_2	Output	NC
12	P_3	Output	
13	O_0	Output	Station indicator output: 7-segment LED, 1 column (a, b, c, d, e, f, g), 10 column
14	O_1	Output	
15	O_2	Output	
16	O_3	Output	
17	O_4	Output	
18	O_5	Output	
19	O_6	Output	
20	O_7	Output	
21	Vss	——	GND
22	R_0	Input/output	DTS-8 interface: Output
23	R_1	Input/output	
24	R_2	Input/output	
25	R_3	Input/output	
26	R_4	Input/output	
27	R_5	Input/output	
28	R_6	Input/output	
29	R_7	Input/output	DTS-8 interface: Input
30	R_8	Input/output	
31	R_9	Input/output	
32	R_{10}	Input/output	
33	R_{11}	Input/output	
34	R_{12}	Input/output	
35	R_{13}	Input/output	
36	R_{14}	Input/output	NC
37	$\overline{ST\text{-}BY}$	Input	Back-up mode start input
38	K_0	Input	Auto-function trigger input
39	K_1	Input	Power switch input
40	K_2	Input	NC
41	K_3	Input	
42	VDD	——	5V

TC9157AP Pin Description

Pin No.	Pin Name	Input/Output	Description
2	XT	Crystal oscillator pin	Connection to 7.2MHz reference frequency crystal oscillator
3	$X\overline{T}$		
4	FM	FM band selector input	FM/MW/LW band switching (alternately reset switches)
5	MW	MW band selector input	
6	LW	LM band selector input	
7	MANUAL	Manual tuning mode selector input	UP/DOWN manual and auto-search mode switching (alternately reset switches)
8	AUTO	Auto-search tuning mode selector input	
9	UP	UP key input	UP/DOWN tuning by push-button key operation.
10	DOWN	DOWN key input	
11	STO	Memory store command input	Preset memory set to write enable status by this input.
12 (19	M1 (M8	Preset memory channel selector input	Control of writing and reading for 16 preset memories in combination with MC1 and MC2 inputs.
20	MC1	Memory control inputs	The 16 preset memories can be fixed to "eight channels each" for FM and AM (MW + LW), or set to "random" where any 16 stations from all three bands (FM, MW, and LW) can be stored in the 16 memories.
21	MC2		
22	OSC2	AM oscillator pin	C/R connection pins for oscillator used to decide scanning speed during AM search operation.
23	OSC1	FM oscillator pin	C/R connection pins for oscillator used to decide scanning speed during FM search.
24	0/5	Output for European FM 50kHz steps	Output for display of 50kHz steps in the European FM band.
25	CK2	Tuned frequency data serial output	Output of serial data and timing clocks to be passed to the tuned frequency digital display driver.
26	CK1		
27	DATA		
28	MUTE	Muting output	Switched to H level during muting operations.
29	E2	Region designation input	Designation of operating region (Japan, US, Europe)
30	E1		
31	STOP3	AM IF signal input	450kHz IF signal counted in AM mode and auto-search stopped.
32	STOP2	Auto-search stop input	Auto-search stopped when STOP2 is switched to H level with STOP1 already switched to H level.
33	STOP1	Slow scan input	Auto-search scanning speed reduced by half when H level input applied to this pin.
34	DO-2	Phase comparator output	Two parallel tri-state buffer outputs from one phase comparator.
35	DO-1		
36	TEST	Test pin	Test mode set when H level applied.
37	FM IN	FM input	Connection to prescalar output.
38	PSC	Prescalar output	Control of prescalar 1/30 and 1/32 frequency divider selection.
39	AM IN	AM input	Input of AM local oscillator signal
40	$\overline{INH}$	Inhibit input	Normal operation when at H level, inhibited when at L level.
41	$\overline{INT}$	Initialize input	Normal operation when at H level, initialization of internal status when at L level.
42	VDD	Power supply pins	Application of 5 ± 0.5V with back-up of up to 2V possible.
1	GND		

OUTLINE OF REMOTE CONTROL CIRCUITS


32 bit
8.2mS
4.1mS
8 bit
8 bit
8 bit
8 bit
C0 C1 C2 C3 C4 C5 C6 C7 C0 C1 C2 C3 C4 C5 C6 C7 D0 D1 D2 D3 D4 D5 D6 D7 D0 D1 D2 D3 D4 D5 D6 D7
Leader Code (1)
Custom Code (2)
Custom Code
Data Code (3)
Data Code

REM output code

1. Reader code

Consisting of an 8.2msec carrier signal and a 4.1msec OFF signal, the reader code is used in reading custom and data codes. The reader code is also used as the detector signal when an input signal is received.

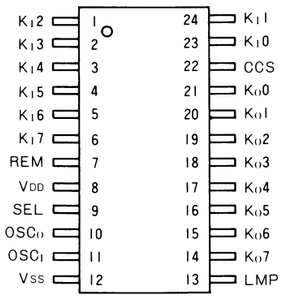
2. Custom code (component code)

The custom code is based on pulse phase modulation (PPM) where 1 and 0 are distinguished by differences in time between pulses.
Each code consists of eight bits, and an inverse code is also transmitted at the same time to prevent misoperation. The REM output custom code C0 thru C7 can be set in 256 different ways by external operation via diodes connected to the CCS (Custom Code Select) pin and key outputs (Ko0 thru Ko7).

3. Data code

Data codes consist of eight bits with D0 thru D4 & D6 corresponding to S01 thru S64. D5 becomes 1 when two keys are pressed simultaneously.
D7 of the data code can be controlled at the SEL pin, and 128 types of data can be trasmitted. And D7 is set to "0" (64 types) by connecting the SEL pin to VDD, and to "1" (64 types) by connecting to VSS.

4. IC (μPD6102G) pin description

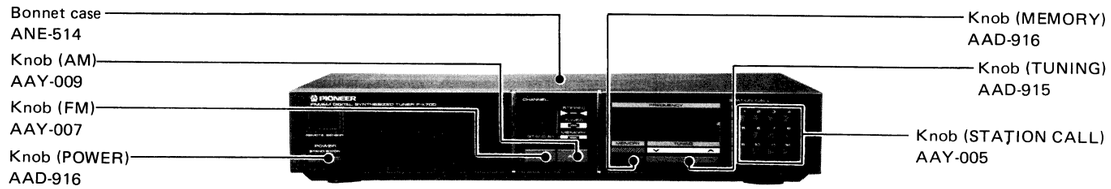


No.	Pin name	I/O	Description	No.	Pin name	I/O	Description
1	K_I2	Input	Key inputs	13	LMP	Output	LAMP OUTPUT
2	K_I3			14	K_O7	Output	
3	K_I4			15	K_O6		
4	K_I5			16	K_O5		
5	K_I6			17	K_O4		
6	K_I7			18	K_O3		
7	REM	Output	REMOTE OUTPUT	19	K_O2		
8	VDD	———	Power supply pin	20	K_O1		
9	SEL	———	64/128 DATA selection	21	K_O0		
10	OSC_O	Output	Oscillator output	22	CCS	Input	Custom code select input
11	OSC_I	Input	Oscillator input	23	K_I0	Input	Key inputs
12	VSS	———	GND	24	K_I1		

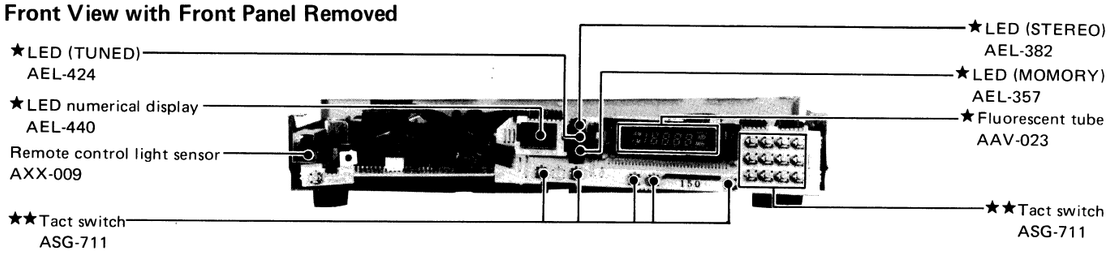
6. PARTS LOCATION

NOTES:
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

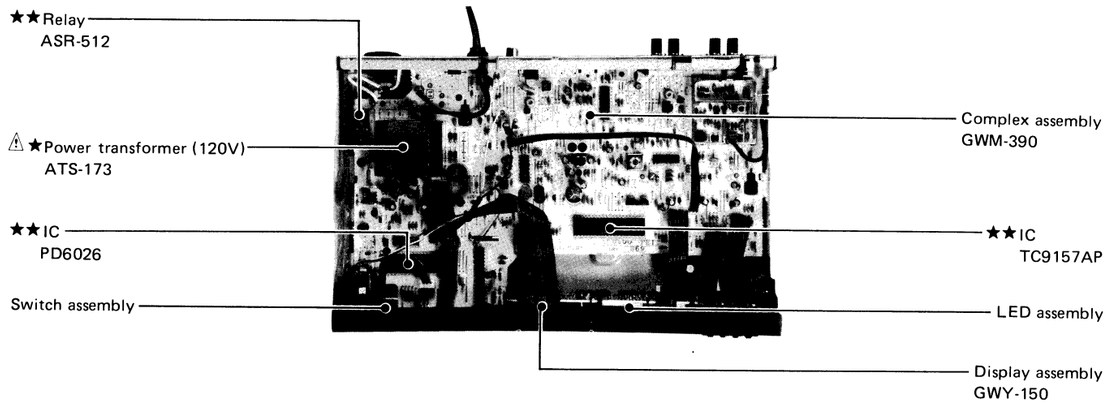
Front Panel View



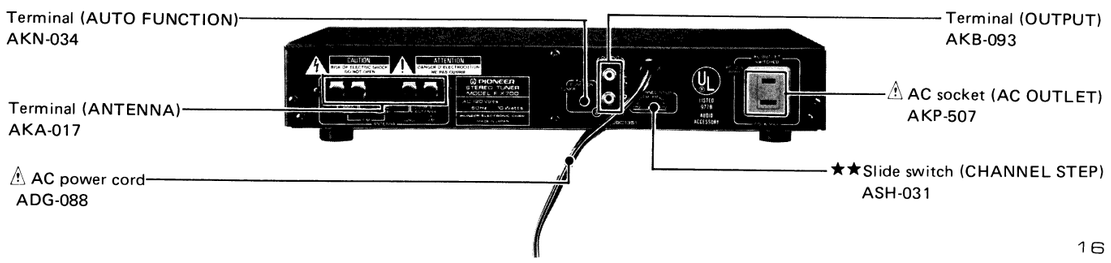
Front View with Front Panel Removed



Top View with Bonnet Removed



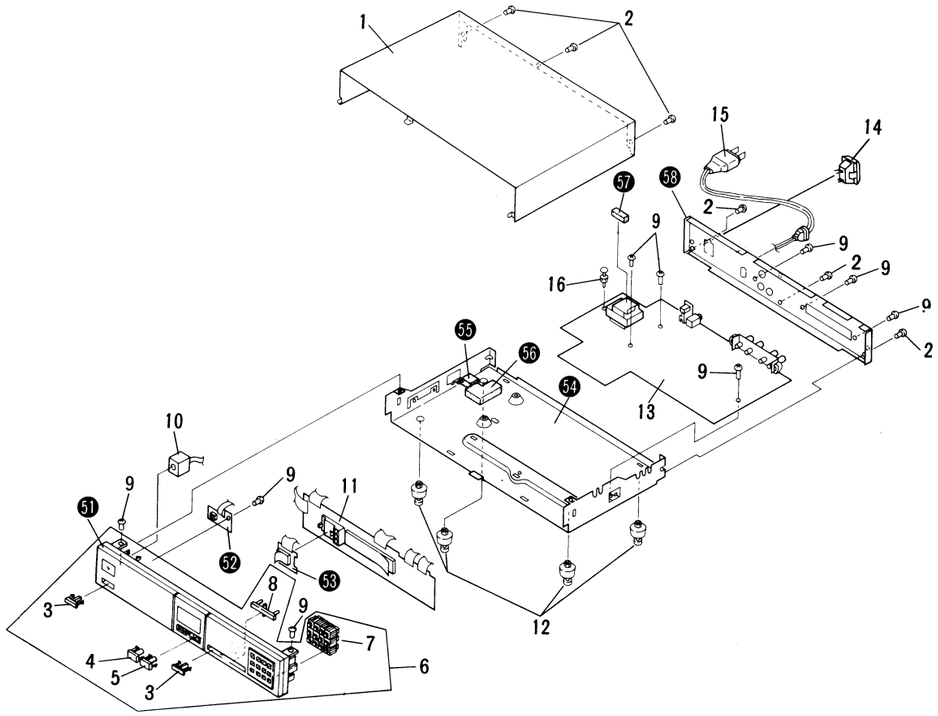
Rear Panel View



7. EXPL

Mark	No.	Pa
	1.	AN
	2.	BE
	3.	AA
	4.	AA
	5.	AA
	6.	AN
	7.	AA
	8.	AA
	9.	BE
	10.	AX
	11.	GW
	12.	AE
	13.	GW
⚠	14.	AK
⚠	15.	AD

7. EXPLODED VIEW AND PARTS LIST

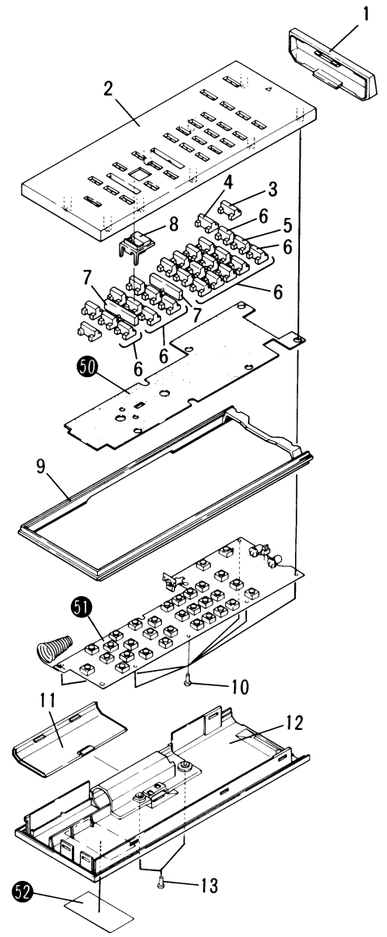


NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	No.	Part No.	Description
	1.	ANE-514	Bonnet case
	2.	BBT30P080FZK	
	3.	AAD-916	Knob (Power, Memory)
	4.	AAY-007	Knob (FM)
	5.	AAY-009	Knob (AM)
	6.	ANM-739	Front panel assembly
	7.	AAY-005	Knob (Station call)
	8.	AAD-915	Knob (Tuning)
	9.	BBZ30P080FZK	
	10.	AXX-009	Remote control light sensor
	11.	GWY-150	Display assembly
	12.	AEP-016	Leg assembly
	13.	GWM-390	Complex assembly
⚠	14.	AKP-507	AC socket (AC OUTLET)
⚠	15.	ADG-088	AC power cord
	16.	AEC-525	Nylon rivet
	51.		Front panel
	52.		Switch assembly
	53.		LED assembly
	54.		Chassis
	55.		Cushion rubber B
	56.		Cushion rubber A
	57.		Cushion rubber C
	58.		Rear panel

EXPLODED VIEWS OF TRANSMITTER ASSEMBLY

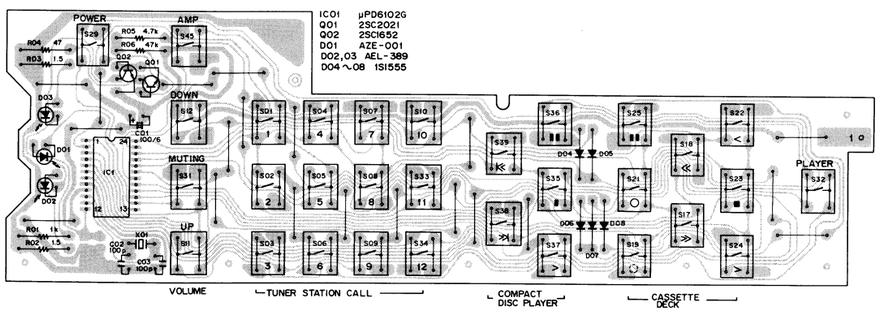


Parts List of Transmitter Assembly

Mark	No.	Part No.	Description
	1.	VAP-020	Filter
	2.	AZN-004	Upper case
	3.	AZA-005	Knob (POWER)
	4.	AZA-004	Knob (VIDEO, START)
	5.	AZA-003	Knob (MUTING, REC)
	6.	AZA-002	Knob (Others)
	7.	AZA-006	Knob (TRACK SEARCH)
	8.	AZA-008	Spacer
	9.	AZA-001	Guide
	10.	PBZ20P050FMC	
	11.	AZN-003	Battery cover
	12.	AZN-002	Lower case
	13.	PBZ20P080FMC	
	50.		Cushion sheet
	51.		Transmitter assembly
	52.		Label

8. P.C. BOARDS CONNECTION DIAGRAM

TRANSMITTER ASSEMBLY



IC01 μPD6102G
Q01 2SC2021
Q02 2SC1652
D01 AZE-001
D02,03 AEL-389
D04～08 1SI555

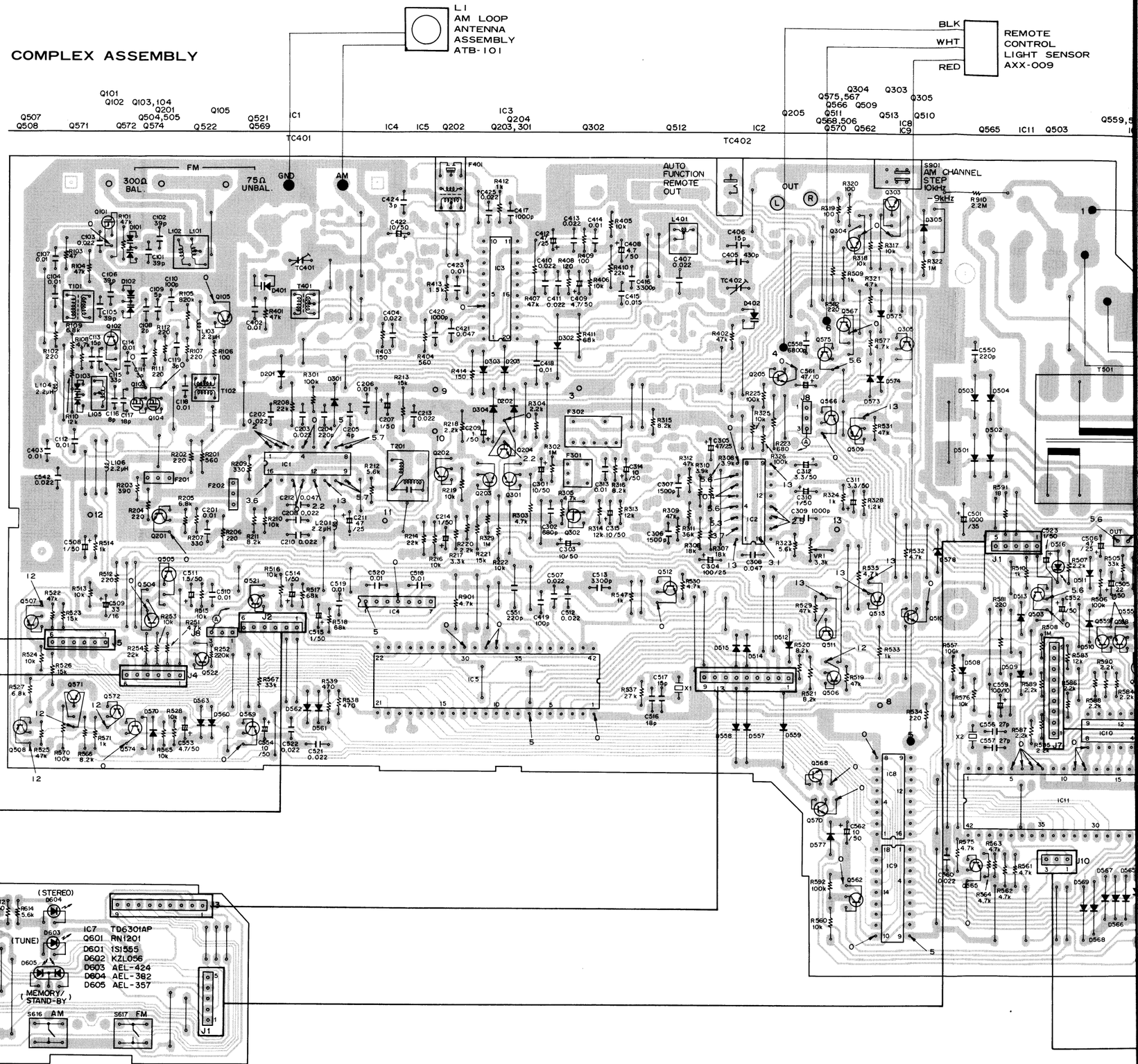
IC1 PA3001-A
IC2 HA12016
IC3 LA1247
IC4 TD6104P
IC5 TC9157AP
IC6 M5278LI2
IC8,10 TD62504P
IC9 M54562P
IC11 PD6026
IC12 M5278L56

Q101 2SK241
Q102,201 2SC2668
Q103,104 2SK161
Q105 2SC2786
Q202,203,301,502～505, Q522,554 2SC1740S
Q205,510,512,521,557, Q563～564,570 RN1201
Q302 2SJ103
Q303,304,551,552 2SC2878

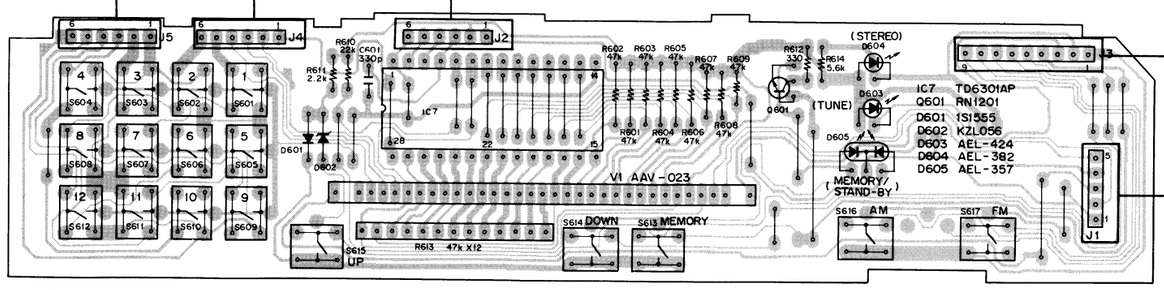
Q305,506～509,511, Q513,553,556,571 2SA933S
Q501 2SD880
Q204,555,558,559,562, Q565～569,574 RN1203
Q572 RN2201
Q575 2SA1346

D101～103 1SV147
D201～203,301～305,508～515, D551～555,557～577 1SI555
D401,402 SVC321C2/D2-SP
D501～504 S5566
D505 KZL140
D506,578 RD3.3EB
D507 RD8.2EB
D516 AEL-437
D571 KZL083

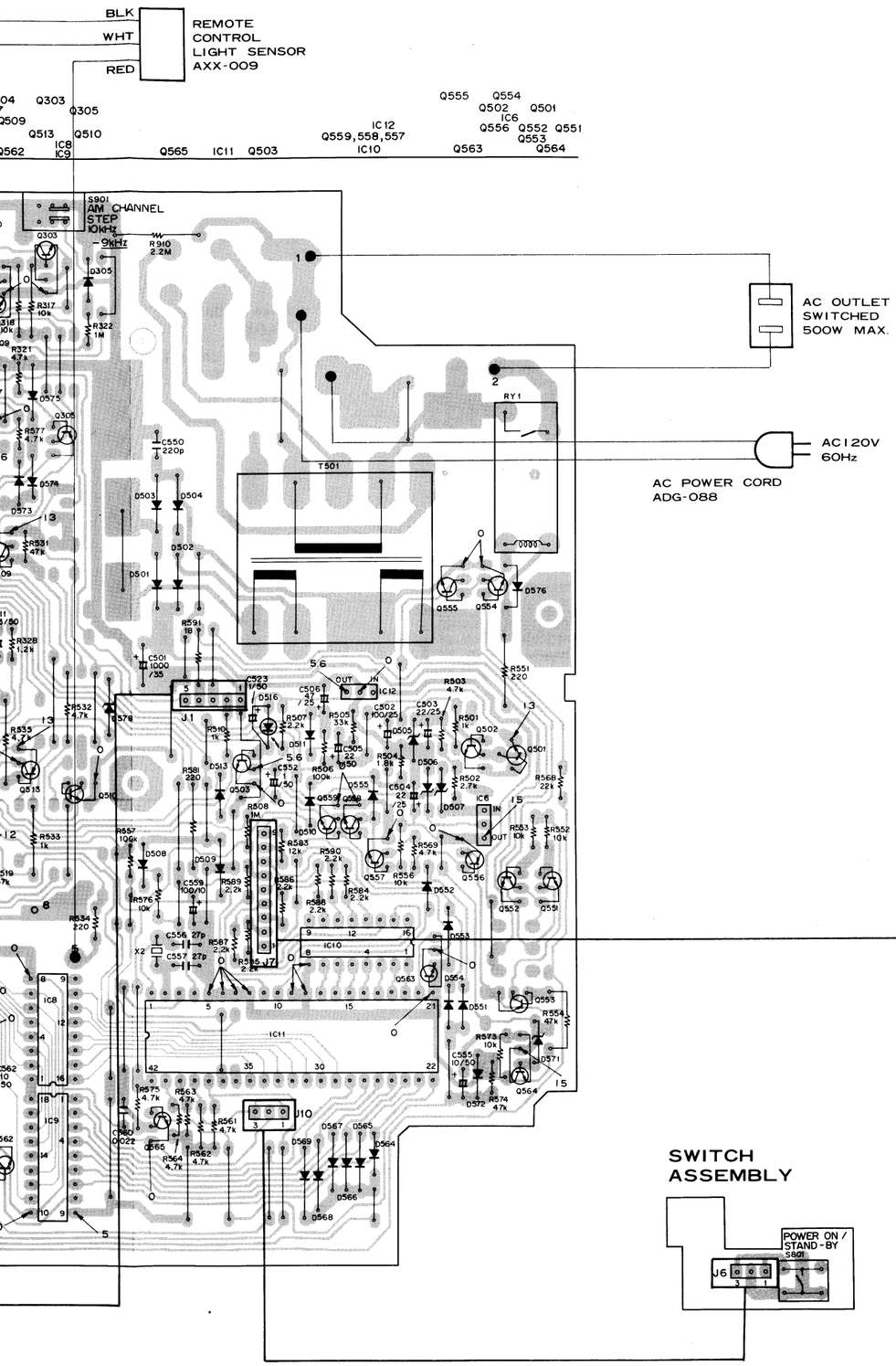
COMPLEX ASSEMBLY



DISPLAY ASSEMBLY

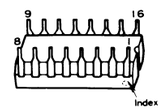


IC7 TD6301AP
Q601 RN1201
D601 1SI555
D602 KZL056
D603 AEL-424
D604 AEL-382
D605 AEL-357

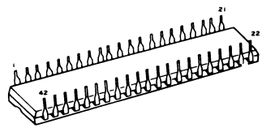


External Appearance of Transistors and ICs

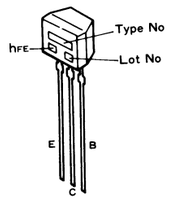
HA12016
PA3001-A
TD62504P



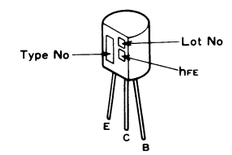
TC9157AP



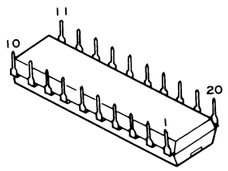
2SC2786



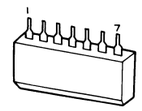
2SC2878



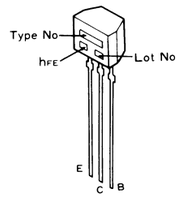
LA1247



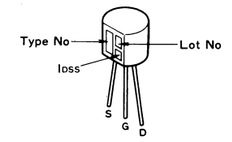
TD6104P



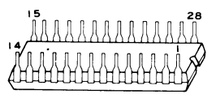
2SC2458
2SA1048



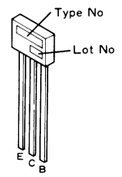
2SJ103



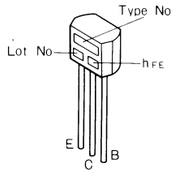
TD6301AP



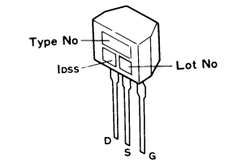
RN1201
RN1203
RN2201
RN2203
2SA1346
2SC3400



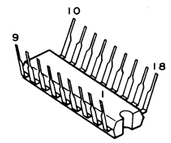
2SC2603
2SA1115



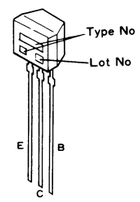
2SK161
2SK241



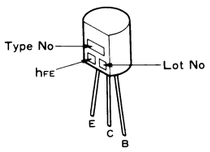
M54562P



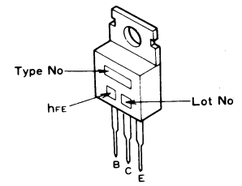
DTC143ES
DTA143ES
DTC124ES
DTA124ES



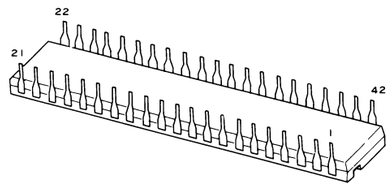
JC501
JA101



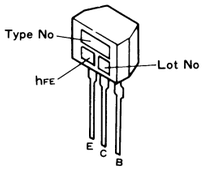
2SD313
2SD880



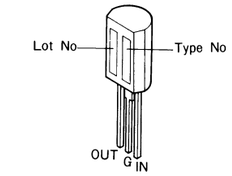
PD6026



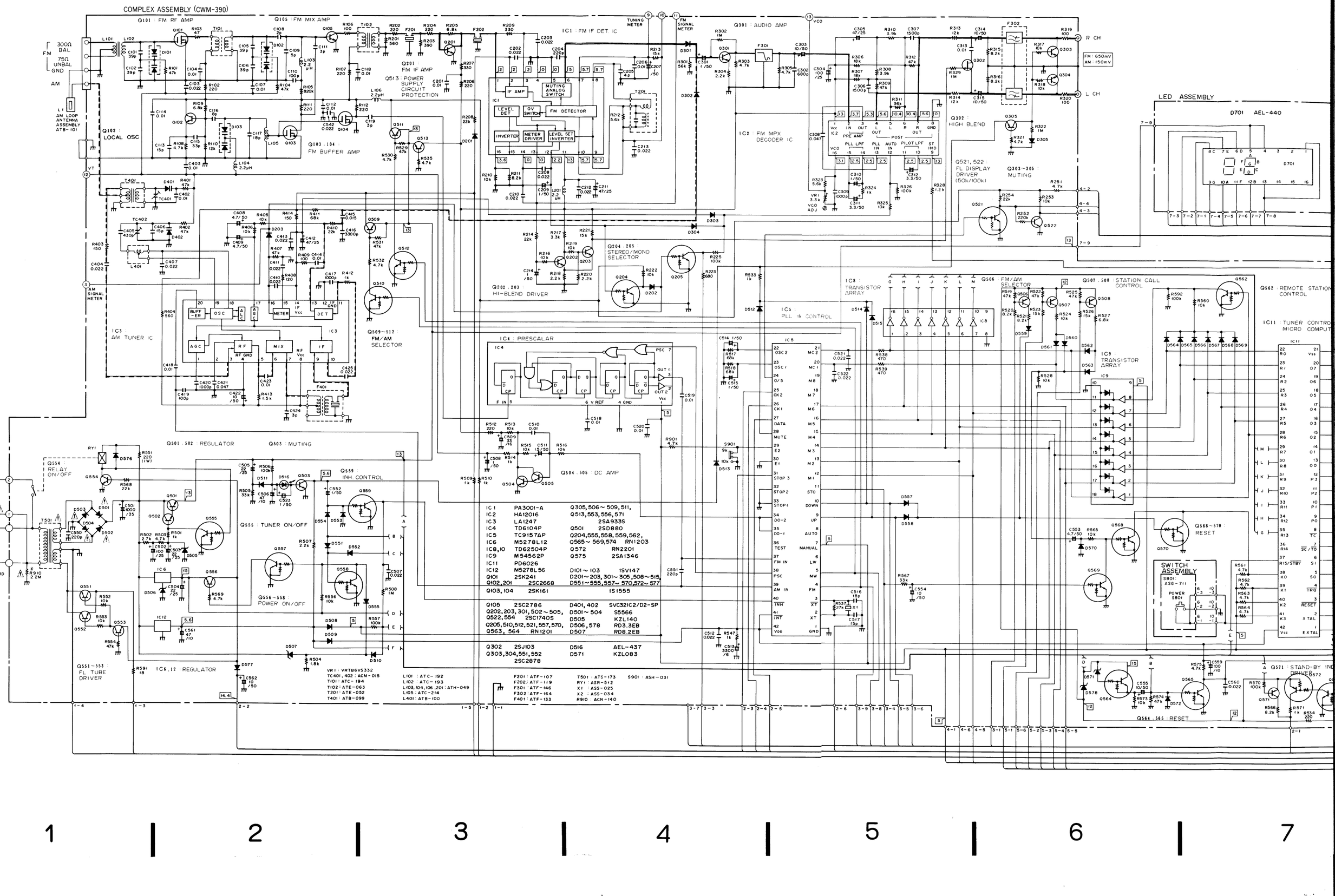
2SA933S
2SC1740S
2SC2668



M5278L12
M5278L56



9. SCHEMATIC DIAGRAM



1. RESISTORS.
Indicated in Ω, ¼W, ⅛ W,±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K), ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT.
: DC voltage (V) at no input signal
: Signal voltage at FM 400Hz ÷ 75kHz DEV.

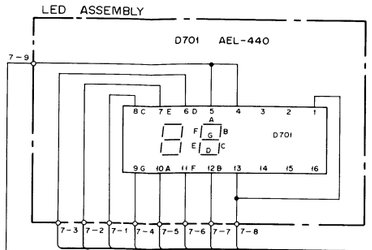
4. OTHERS:
: Signal route.
: Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

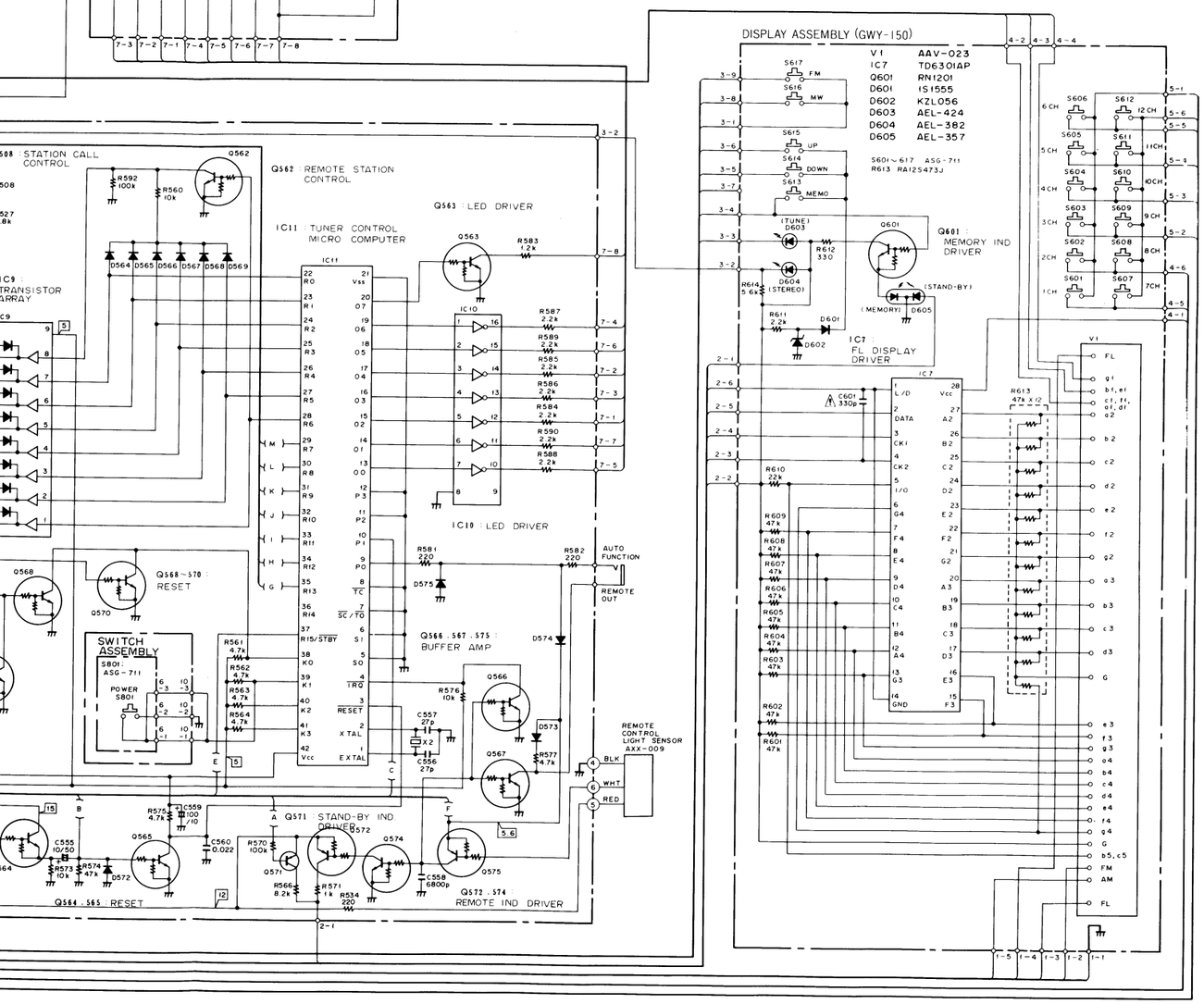
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES:

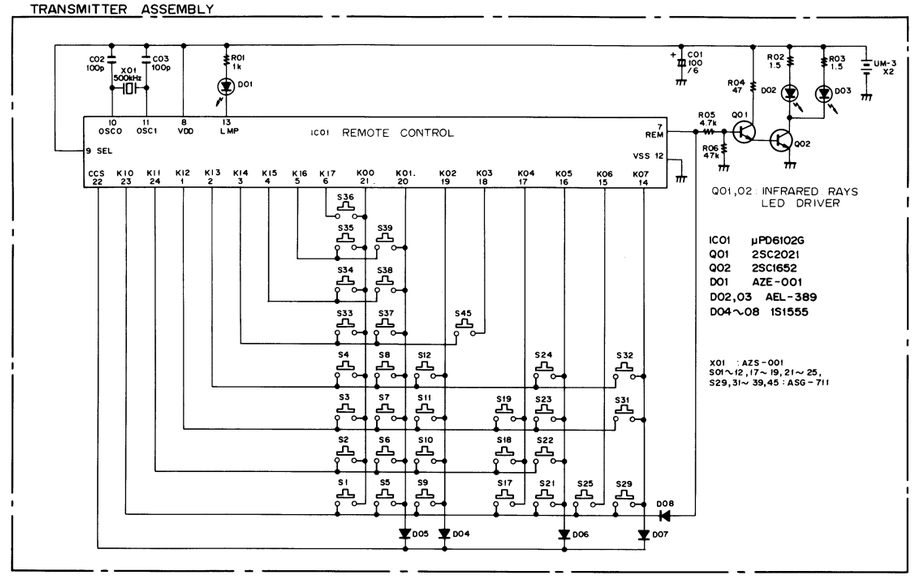
S601	STATION CALL 1	ON – OFF
S602	STATION CALL 2	ON – OFF
S603	STATION CALL 3	ON – OFF
S604	STATION CALL 4	ON – OFF
S605	STATION CALL 5	ON – OFF
S606	STATION CALL 6	ON – OFF
S607	STATION CALL 7	ON – OFF
S608	STATION CALL 8	ON – OFF
S609	STATION CALL 9	ON – OFF
S610	STATION CALL 10	ON – OFF
S611	STATION CALL 11	ON – OFF
S612	STATION CALL 12	ON – OFF
S613	MEMORY	ON – OFF
S614	DOWN	ON – OFF
S615	UP	ON – OFF
S616	AM	ON – OFF
S617	FM	ON – OFF
S801	POWER ON/STAND-BY	ON – STAND-BY
S901	AM CHANNEL STEP	9kHz – 10kHz

The underlined indicates the switch position.





TRANSMITTER ASSEMBLY



1. RESISTORS.
Indicated in Ω, ¼W, ⅛ W,±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. SWITCHES

S01	TUNER STATION CALL 1	ON – OFF
S02	TUNER STATION CALL 2	ON – OFF
S03	TUNER STATION CALL 3	ON – OFF
S04	TUNER STATION CALL 4	ON – OFF
S05	TUNER STATION CALL 5	ON – OFF
S06	TUNER STATION CALL 6	ON – OFF
S07	TUNER STATION CALL 7	ON – OFF
S08	TUNER STATION CALL 8	ON – OFF
S09	TUNER STATION CALL 9	ON – OFF
S10	TUNER STATION CALL 10	ON – OFF
S11	UP (VOLUME)	ON – OFF
S12	DOWN (VOLUME)	ON – OFF
S17	CASSETTE DECK ≫ (FF)	ON – OFF
S18	CASSETTE DECK ≪ (REW)	ON – OFF
S19	CASSETTE DECK ◌ (REC MUTE)	ON – OFF
S21	CASSETTE DECK ○ (REC)	ON – OFF
S22	CASSETTE DECK < (REVERSE PLAY)	ON – OFF
S23	CASSETTE DECK ■ (STOP)	ON – OFF
S24	CASSETTE DECK > (FORWARD PLAY)	ON – OFF
S25	CASSETTE DECK ▮▮ (PAUSE)	ON – OFF
S29	POWER	ON – OFF
S31	MUTING (VOLUME)	ON – OFF
S32	PLAYER START / STOP	ON – OFF
S33	TUNER STATION CALL 11	ON – OFF
S34	TUNER STATION CALL 12	ON – OFF
S35	COMPACT DISC PLAYER ■ (STOP)	ON – OFF
S36	COMPACT DISC PLAYER ▮▮ (PAUSE)	ON – OFF
S37	COMPACT DISC PLAYER > (PLAY)	ON – OFF
S38	COMPACT DISC PLAYER ⩾ (TRACK SEARCH)	ON – OFF
S39	COMPACT DISC PLAYER ⩽ (TRACK SEARCH)	ON – OFF
S45	AMP VIDEO/AUX	ON – OFF

The underlined indicates the switch position.

10. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 . . . . .*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473 . . . . .*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5 . . . . . .*		*RN2H 0 R 5 K*
1Ω	*010 . . . . . .*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 . . . .*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous

Mark	Symbol & Description	Part No.
	Complex assembly	GWM-390
	Display assembly	GWY-150
	Switch assembly	Non supply
	LED assembly	Non supply
	AC socket (AC OUTLET)	Non supply
	AC power cord	ADG-088
	AM loop antenna assembly	ATB-101

Complex Assembly (GWM-390)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC2	HA12016
★★	IC3	LA1247
★★	IC6	M5278L12
★★	IC12	M5278L56
★★	IC9	M54562P
★★	IC1	PA3001-A
★★	IC11	PD6026
★★	IC5	TC9157AP
★★	IC4	TD6104P
★★	IC8, IC10	TD62504P
★★	Q205, Q510, Q512, Q557, Q563, Q564, Q570	RN1201 (DTC143ES)
★★	Q204, Q555, Q558, Q559, Q562, Q565 – Q569, Q574	RN1203 (DTC124ES) (2SC3400)
★★	Q572	RN2201 (DTA143ES)
★★	Q575	2SA1346 (DTA124ES)
★★	Q305, Q506 – Q509, Q511, Q513, Q553, Q571	2SA933S (JA101) (2SA1048) (2SA1115)
★★	Q556	2SA933S (2SA1115)
★★	Q202, Q203, Q301, Q502 – Q505, Q554	2SC1740S (JC501) (2SC2458) (2SC2603)
★★	Q102, Q201	2SC2668
★★	Q105	2SC2786-L
★★	Q303, Q304, Q551, Q552	2SC2878
★★	Q501	2SD880 (2SD313)
★★	Q302	2SJ103
★★	Q103, Q104	2SK161-Y (2SK241-Y)
★★	Q101	2SK241-Y
★	D516	AEL-437
★	D571	KZL083
★	D505	KZL140
★	D506, D578	RD3.3EB (HZ3.3EB)
★	D507	RD8.2EB (HZ8.2EB)
★	D401, D402	SVC321C2/D2
⚠ ★	D501 – D504	S5566
★	D101 – D103	(11E2) 1SV147
★	D201 – D203, D301 – D305, D508 – D515, D551 – D555, D557 – D570, D572 – D577	1S1555 (US1035)

SWITCH AND RELAY

Mark	Symbol & Description	Part No.
★★	S901	ASH-031
★★	RY1	ASR-512

TRANSFORMERS AND COILS

Mark	Symbol & Description	Part No.
★	T101 FM RF transformer	ATC-194
★	T102 FM coupling transformer	ATE-063
★	T201 FM DET transformer	ATE-052
★	T401 AM ANT transformer	ATB-099
⚠ ★	T501 Power transformer	ATS-173
	L101 FM ANT coil	ATC-192
	L102 FM ANT coil	ATC-193
	L103, L104, L106, L201 Inductor	ATH-049
	L105 FM OSC coil	ATC-214
	L401 AM OSC coil	ATB-100
	F201 FM ceramic filter	ATF-107
	F202 FM ceramic filter	ATF-119
	F301 Beat eliminate filter	ATF-146
	F302 Low pass filter	ATF-164
	F401 AM ceramic filter	ATF-133

CAPACITORS

Mark	Symbol & Description	Part No.
	TC401, TC402	ACM-015
	C424	CCDCH030C50
	C205	CCDCH040C50
	C116	CCDCH080D50
	C113, C406, C517	CCDCH150J50
	C516	CCDCH180J50
	C556, C557	CCDCH270J50
	C115	CCDCH330J50
	C101, C102, C105, C106	CCDRH390J50
	C108	CCDSL020C50
	C111, C119	CCDSL030C50
	C109	CCDSL050C50
	C110, C419	CCDSL101J50
	C204, C550	CCDSL221J50
	C117	CCDTH180J50
	C513	CEAS332M6
	C523	CEA010M50L
	C207, C209, C214, C301, C310, C508, C514, C515, C552	CEA010M50L
	C511	CEA1R5M50L
	C303, C314, C315, C422, C554, C555, C562	CEA100M50L
	C559	CEA101M10L
	C304, C502	CEA101M25L
	C501	CEA102M35L
	C503 – C505	CEA220M25L
	C311, C312	CEA3R3M50L
	C509	CEA330M16L
	C408, C409, C553	CEA4R7M50L
	C506, C561	CEA470M10L
	C211, C305, C412	CEA470M25L
	C417, C420	CKDYB102K50
	C416	CKDYB332K50
	C302	CKDYB681K50
	C558	CKDYB682K50
	C104, C107, C112, C114, C118, C201, C206, C313, C402, C403, C414, C423, C510, C518 – C520	CKDYF103Z50
	C103, C202, C203, C208, C210, C213, C404, C407, C410, C411, C413, C425, C507, C512, C521, C522, C542, C560	CKDYF223Z50
	C308, C421	CKDYF473Z50
	C212	CKDYX473M25
	C551	CKPYB221K50
	C418	CKPYX103N25
	C306, C307	CQMA152J50
	C415	CQMA153J50
	C309	CQSA102J50
	C405	CQSA431J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR1 Semi-fixed (3.3k)	VRTB6VS332
	R910 (2.2M, 1/2W)	ACN-140
	R414 Carbon composition	RD1/4PM151J
	R551	RS1LMF221J
	Other resistors	RD1/8PM □□□J

OTHERS

Mark	Symbol & Description	Part No.
	X1 X'tal resonator	ASS-025
	X2 Ceramic resonator	ASS-034
	Terminal (ANTENNA)	AKA-017
	Terminal (OUTPUT)	AKB-093
	Terminal (AUTO FUNCTION)	AKN-034
	Screw	PBZ30P060FMC

Switch Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S801 Tact switch	ASG-711 (ASG-703)

Display Assembly (GWY-150)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC7	TD6301AP
★★	Q601	RN1201 (DTC143ES)
★	D605	AEL-357
★	D604	AEL-382
★	D603	AEL-424
★	D602	KZL056
★	D601	1S1555 (US1035)

SWITCHES

Mark	Symbol & Desc
★★	S601 – S617

CAPACITORS

Mark	Symbol & Desc
⚠	C601

RESISTORS

NOTE: When ordering into code form

Mark	Symbol & Desc
★	R613
★	Other resistors

OTHER

Mark	Symbol & Desc
★	Fluorescent tub

LED Assembly

SEMICONDUCTOR

Mark	Symbol & Desc
★	D701

Transmitter Assem

SEMICONDUCTORS

Mark	Symbol & Desc
	IC1
	Q01
	Q02.
	D01 LE
	D02, D03 LE
	D04 – D08

SWITCHES AND OTH

Mark	Symbol & Desc
	S01 – S12, S17
	S29, S31 – S39
	X01 Cer
	Ter
	Ter

CAPACITORS

Mark	Symbol & Desc
	C01
	C02, C03

RESISTORS

NOTE: When ordering into code form,

Mark	Symbol & Desc
	R01 – R06

SWITCHES

Mark	Symbol & Description	Part No.
★★	S601 – S617	ASG-711 (ASG-703)

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C601	CKDYB331K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	R613	RA12S473J
★	Other resistors	RD1/8PM □□□J

OTHER

Mark	Symbol & Description	Part No.
★	Fluorescent tube	AAV-023

LED Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★	D701	AEL-440

Transmitter Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	μPD6102G
	Q01	2SC2021
	Q02.	2SC1652
	D01 LED	AZE-001
	D02, D03 LED	AEL-389
	D04 – D08	1S1555

SWITCHES AND OTHERS

Mark	Symbol & Description	Part No.
	S01 – S12, S17 – S19, S21 – S25, S29, S31 – S39, S45 Tact switch	ASG-711
	X01 Ceramic resonator	AZS-001
	Terminal (A)	
	Terminal (B)	AZK-002

CAPACITORS

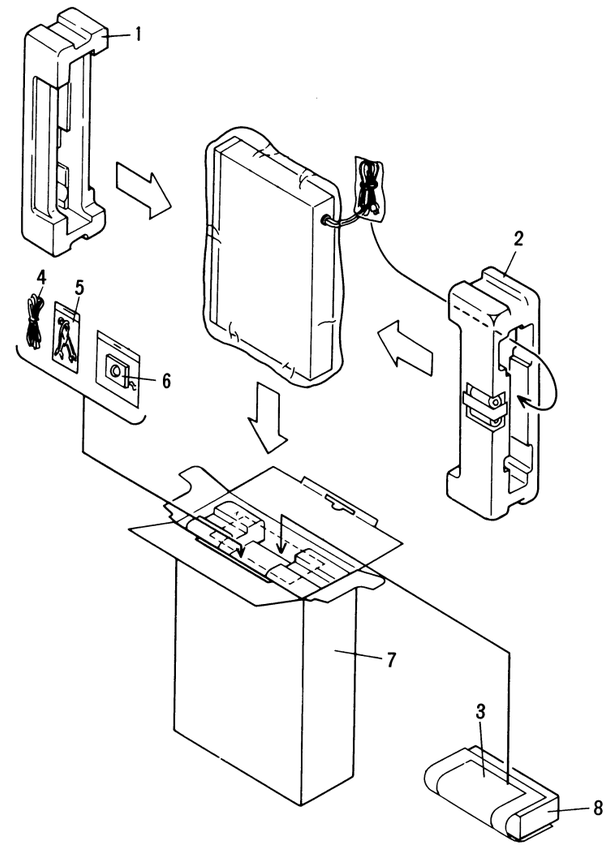
Mark	Symbol & Description	Part No.
	C01	CEA101M6L
	C02, C03	CCDCH101J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R01 – R06	RD1/4PM □□□J

11. PACKING



Mark	No.	Part No.	Description
	1.	AHA-326	Front pad
	2.	AHA-327	Rear pad
	3.	ARB-641	Operating instructions
	4.	ADH-005	FM antenna
	5.	ADE-045	Connection cord
	6.	ATB-101	Loop antenna assembly
	7.	AHE-465	Packing case
	8.	ADX-004	Transmitter assembly

12. ADJUSTMENTS

FM Tuner Section Adjustment

- Connect up as indicated in Fig. 12-1.
- Press the FM key to set FM mode.

Step No.	FM SG (1kHz, ± 75 kHz dev.)		F-X700 tuned frequency display	Adjustment	
	Frequency (MHz)	Level (dB)		Adjustment location	Specifications
1	No input signal		87.5 MHz	———	Check pin 12 (3.4V ± 1.5V of complex assembly.
2			108.0 MHz	———	Check pin 12 ($8.7V^{+2.5}_{-2.0V}$) of complex assembly
3	98.0	20 ~ 30	98.0 MHz	T101, T102	Set the output from pin 11 of the complex assembly to maximum level.
4	98.0	60	98.0 MHz	T201	Adjust voltage across pins 9 and 10 of complex assembly to 0V (± 30mV).
5	98.0 (No modulation)	80	98.0 MHz	VR1	Adjust the frequency at pin 13 of complex assembly to 76kHz (± 400Hz).
6	98.0 (Stereo modulation (note))	80	98.0 MHz	T102	Minimize distortion in both left and right channel outputs (adjust T102 to within ± 90°).
7	98.0 (Stereo modulation (note))	Variable	98.0 MHz	Check the STEREO indicator lamp level (disconnect R210 (10 kohm) if level greater than 32dB, and then check that lamp comes on at level below 32dB).	
8	98.0 (Stereo modulation (note))	Variable	98.0 MHz	Gradually reduce the SG output level and check that high-blend is activated.	

Note: Stereo modulation: Main 1kHz L+R ± 68.25 kHz dev.
Pilot 19kHz ± 6.75 kHz dev.

AM(WM)Tuner Section Adjustment

- Connect up as indicated in Fig. 12-2.
- Press the AM (MW) key to set AM (MW) mode.
- Set the AM CHANNEL STEP switch to the 9kHz position.

Step No.	AM SG (400Hz, 30% modulation)		F-X700 tuned frequency display	Adjustment	
	Frequency (kHz)	Level (dB)		Adjustment location	Specifications
1	No input signal		531 kHz	L401	Set pin 12 of complex assembly to 1.3V (± 0.1V).
2			1602 kHz	TC402	Set pin 12 of complex assembly to 10.0V (± 0.5V).
3	Repeat steps 1 and until both specification ratings are stisfied.				
4	603	40	603 kHz	T401	Set the output from pin 3 of the complex assembly to maximum level.
5	1395	40	1395 kHz	TC401	
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	1395	Variable	1395 kHz	Check that the TUNING indicator comes on when the AM SG level is gradually.	

AM (LW) Tuner Section Adjustment (F-X700L only)

- Connect up as indicated in Fig. 12-2.
- Press the AM (LW) key to set AM (LW) mode.

Step No.	AM SG (400Hz, 30% modulation)		F-X700L tuned frequency display	Adjustment	
	Frequency (kHz)	Level (dB)		Adjustment location	Specifications
1	No input signal		281 kHz	L402	Set pin 12 of complex assembly to 5.2V (± 0.1V).
2	164	40	164 kHz	T402	
3	254	40	254 kHz	TC403	Set the output from pin 3 of the complex assembly to maximum level.
4	Repeat steps 2 and 3 until both specifications ratings are satisfied.				

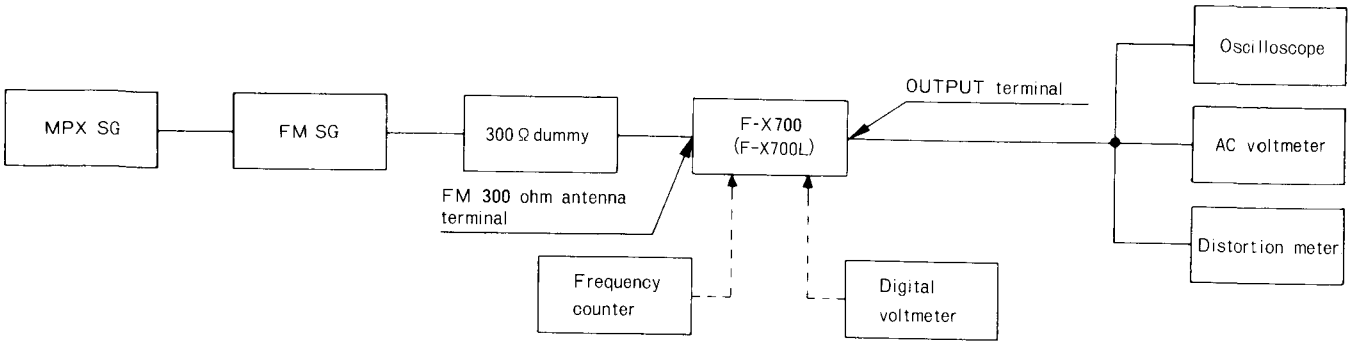


Fig. 12-1. FM adjustment connection diagram

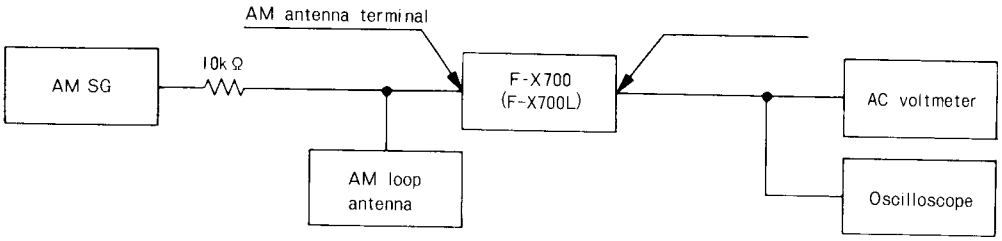


Fig. 12-2 AM adjustments connection diagram

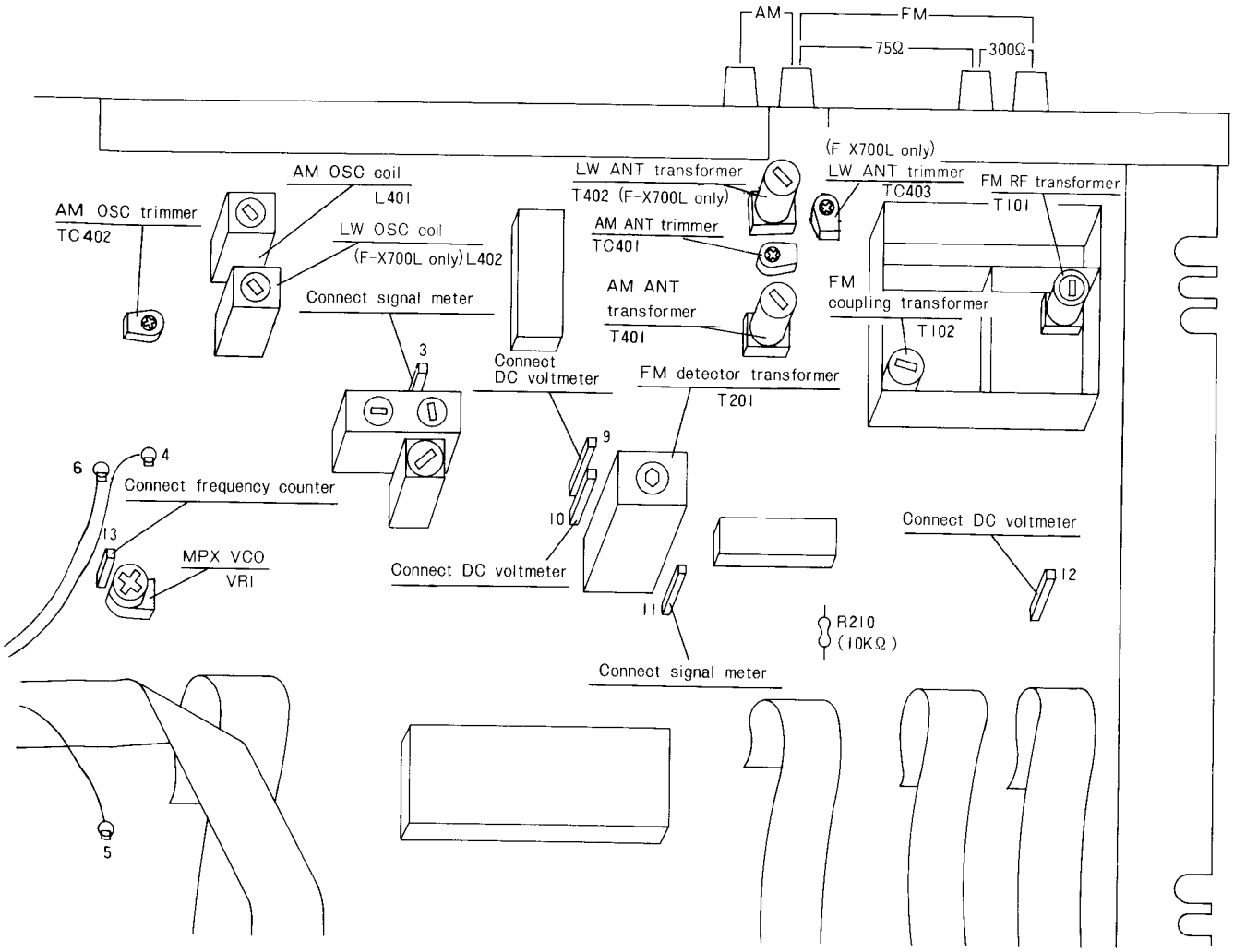


Fig. 12-3 Adjustment positions

12. RÉGLAGE

Reglage de la Section du Tuner FM

- Exécuter les branchements comme indiqué par la figure 12-1.
- Presser la touche FM pour régler sur le mode FM.

No. d'étape	FM SG (40kHz ± 75kHz de déviat		Affichage de fréquence accordée F-X700	Réglage	
	Fréquence (MHz)	Niveau (dB)		Emplacement de réglage	Spécifications
1	Aucun signal d'entrée		87,5MHz	———	Vérifier la broche 12 (3,4V ± 1,5V) de l'ensemble complexe.
2			108,0MHz	———	Vérifier la broche 12 ($8{,}7V^{+2,5}_{-2,5}V$) de l'ensemble complexe.
3	98,0	20 ~ 30	98,0MHz	T101, T102	Régler la sortie de la broche 11 de l'ensemble complexe sur sa valeur maximum.
4	98,0	60	98,0MHz	T201	Régler la tension s'appliquant aux broches 9 et 10 de l'ensemble complexe sur 0V (± 30 mV).
5	98,0 (Aucune modulation)	80	98,0MHz	VR1	Régler la fréquence à la broche 13 de l'ensemble complexe sur 76 kHz (± 400 Hz).
6	98,0 (Modulation stéréo (note))	80	98,0MHz	T102	Minimiser la distorsion aux sorties des canaux de droite et de gauche (régler T102 dans les limites de ± 90°).
7	98,0 (Modulation stéréo (note))	Variable	98,0MHz	Vérifier le niveau du voyant STEREO. Déconnecter R210 (10 kohm) si le niveau est supérieur à 32 dB, et vérifier si le voyant indique un niveau en dessous de 32 dB.	
8	98,0 (Modulation stéréo (note))	Variable	98,0MHz	Réduire graduellement le niveau de sortie SG et vérifier si le mélange élevé ("High Blend") est activé.	

Note: Modulation stéréo: Principale 1 kHz G + D ± 68,25kHz de déviation
Pilote 19 kHz ± 6,75 kHz de déviation

Réglage de la Section du Tuner AM(MW)

- Exécuter les branchements comme indiqué par la figure 12-1.
- Presser la touche AM (MW) pour régler sur le mode AM (MW).
- Régler le commutateur AM CHANNEL STEP sur la position 9 kHz.

No. d'étape	AM SG (400Hz, 30% de modulation)		Affichage de fréquence accordée F-X700	Réglage	
	Fréquence (kHz)	Niveau (dB)		Emplacement de réglage	Spécifications
1	Aucun signal d'entrée		531 kHz	L401	Régler la broche 12 de l'ensemble complexe sur 1,3V (± 0,1V).
2			1802 kHz	TC402	Régler la broche 12 de l'ensemble complexe sur 10,0V (± 0,5V).
3	Répéter les étapes 1 jusqu'à ce que les deux valeurs spécifiées soient obtenues.				
4	603	40	603 kHz	T401	Régler la sortie de la broche 13 de l'ensemble complexe sur sa valeur maximum.
5	1395	40	1395 kHz	TC401	
6	Répéter les étapes 4 et 5 jusqu'à ce que les deux valeurs spécifiées soient obtenues.				
7	1395	Variable	1395 kHz	Vérifier si le voyant TUNING (accord) s'allume lorsque le niveau AM SG est augmenté graduellement.	

Réglage de la Section du Tuner AM (LW) (F-X700L unique)

- Exécuter les branchements comme indiqué par la figure 12-2.
- Presser la touche AM (LW) pour régler sur le mode AM (LW).

No. d'étape	AM SG (400Hz, 30% de modulation)		Affichage de fréquence accordée F-X700L	Réglage	
	Fréquence (kHz)	Niveau (dB)		Emplacement de réglage	Spécifications
1	Aucum signal d'entrée		281 kHz	402	Régler la broche 12 de l'ensemble complexe sur 5,2V (± 0,1V).
2	164	40	184 kHz	T402	
3	254	40	254 kHz	TC403	Régler la sortie de la broche 3 de l'ensemble complexe sur son niveau maximum.
4	Répéter les étapes 2 et 3 jusqu'à ce que les deux valeurs spécifiées soient obtenues.				

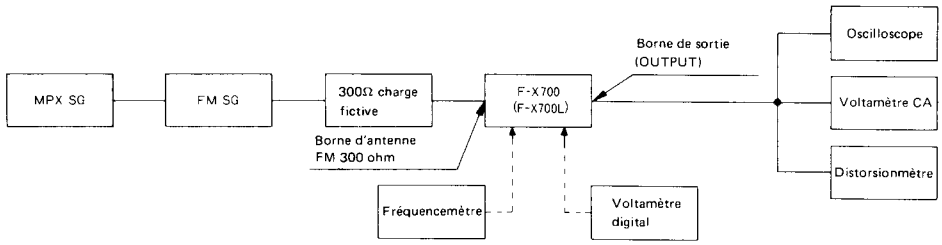


Fig. 12-1 Schéma de câblage de réglage FM

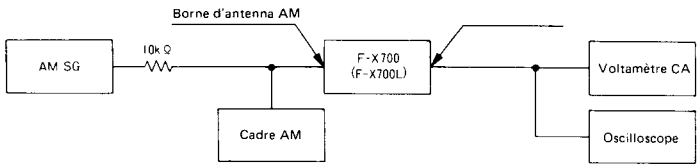


Fig. 12-2 Schéma de câblage du réglage AM

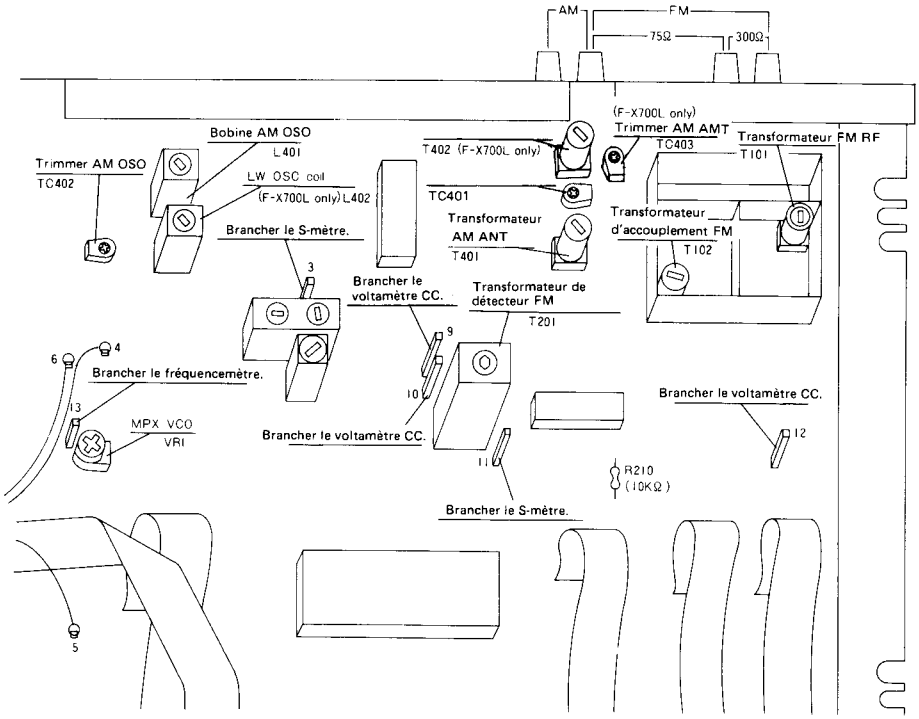


Fig. 12-3 Positions de réglage

12. AJUSTE

Ajustes de la Sección del Sintonizador FM

- Ejecutar las conexiones como se ilustra en la figura 12-1.
- Presionar la tecla FM para ajustar al modo FM.

Paso No.	FM SG (40kHz ± 75kHz de desviación)		Indicación de frecuencia sintonizada F-X700	Ajuste	
	Frequencia (MHz)	Nivel (dB)		Posición de ajuste	Especificaciones
1	No hay señal de entrada		87,5MHz	———	Verificar la clavija 12 (3,4V ± 1,5V) del conjunto complejo.
2			108,0MHz	———	Verificar la clavija 12 (8,7V $^{+2,5}_{-2,0}$V) del conjunto complejo.
3	98,0	20 ~ 30	98,0MHz	T101, T102	Ajustar el voltaje en las clavijas 9 y 10 del conjunto complejo al valor máximo.
4	98,0	60	98,0MHz	T201	Ajustar el voltaje en las clavijas 9 y 10 del conjunto complejo al valor 0V (± 30 mV).
5	98,0 (No hay modulación)	80	98,0MHz	VR1	Ajustar la frecuencia en la clavija 13 del conjunto complejo al valor 76 kHz (± 400 Hz).
6	98,0 (Modulación estereofónica (nota))	80	98,0MHz	T102	Minimizar la distorsión en las salidas de los canales de derecha e izquierda (ajustar T102 a los límites de ± 90°).
7	98,0 (Modulación estereofónica (nota))	Variable	98,0MHz	Verificar el nivel de la lámpara STEREO. Desconectar R210 (10 kohmios) si el nivel es superior a 32 dB, y verificar si la lámpara indica un nivel bajo 32 dB.	
8	98,0 (Modulación estereofónica (nota))	Variable	98,0MHz	Reducir gradualmente el nivel de salida SG y verificar si el mezclado alto ("High Blend") está activado.	

Nota: Modulación estereofónica: Principal 1 kHz Izq. Der. 68,25kHz de desviación.
Piloto 19 kHz ± 6,75kHz de desviación.

Ajuste de la Sección del Sintonizador AM

- Ejecutar las conexiones como se ilustra en la figura 12-1.
- Presionar la tecla AM (MW) para ajustar al modo AM (MW).
- Ajustar el conmutador AM CHANNEL STEP a la posición 9 kHz.

Paso No.	AM SG (400Hz, 30% de modulación)		Indicación de frecuencia sintonizada F-X700	Ajuste	
	Frecuencia (kHz)	Nivel (dB)		Posición de ajuste	Especificaciones
1	Ninguna señal de entrada		531 kHz	L401	Ajustar la clavija 12 del conjunto complejo al valor 1,3V (± 0,1V).
2			1802 kHz	TC402	Ajustar la clavija 12 del conjunto complejo al valor (10,0V ± 0,5V).
3	Repetir los pasos 1 hasta que se obtengan ambos valores especificados.				
4	603	40	603 kHz	T401	Ajustar la salida de la clavija 13 del conjunto complejo al valor máximo.
5	1395	40	1395 kHz	TC401	
6	Repetir los pasos 4 y 5 hasta que se obtengan ambos valores especificados.				
7	1395	Variable	1395 kHz	Verificar si la lámpara TUNING (sintonización) se enciende cuando el nivel AM SG está aumentando gradualmente.	

Ajuste de la Sección del Sintonizador AM (LW) (F-X700L sólo)

- Ejecutar las conexiones como se ilustra en la figura 12-2.
- Presionar la tecla AM (LW) para ajustar al modo AM (LW).

Paso No.	AM SG (400Mz, 30% de modulación)		Indicación de frecuencia sintonizada F-X700L	Ajuste	
	Frecuencia (kHz)	Nivel (dB)		Posición de ajuste	Especificaciones
1	No hay señal de entrada		281 kHz	L402	Ajustar la clavija 12 del conjunto complejo al valor 5,2V (± 0,1V).
2	164	40	164 kHz	T402	
3	254	40	254 kHz	TC403	Ajustar la salida de la clavija 3 del conjunto complejo al nivel máximo.
4	Repetir los pasos 2 y 3 hasta que se obtengan ambos valores especificados.				

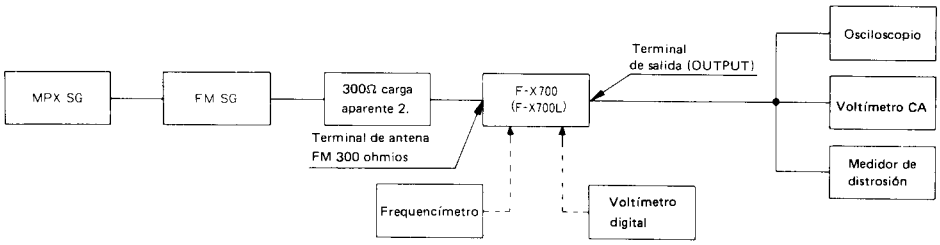


Fig. 12-1 Diagrama de conexión del ajuste FM

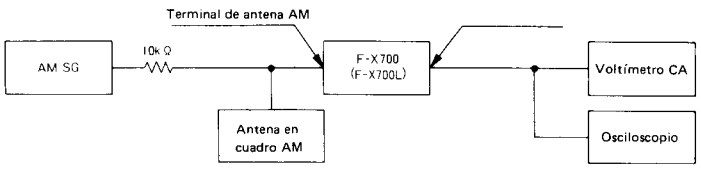


Fig. 12-2 Diagrama de conexión del ajuste AM

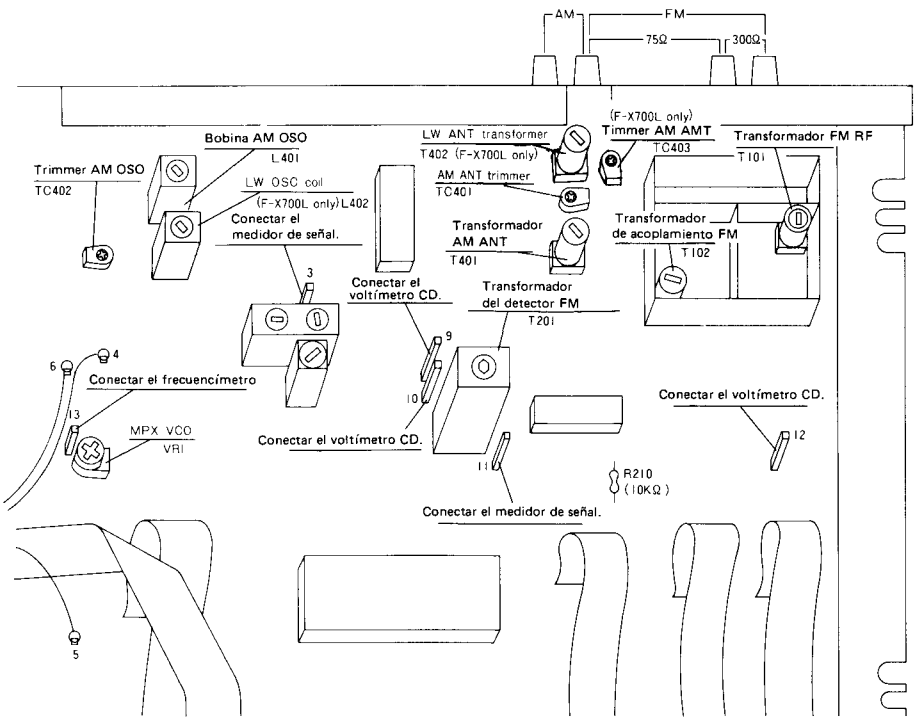


Fig. 12-3 Posiciones de ajuste

13. FOR S AND S/G TYPES

The F-X700/S and F-X700/S/G are the same as the F-X700/KU with the exception of the following sections.

Contrast of Miscellaneous Parts

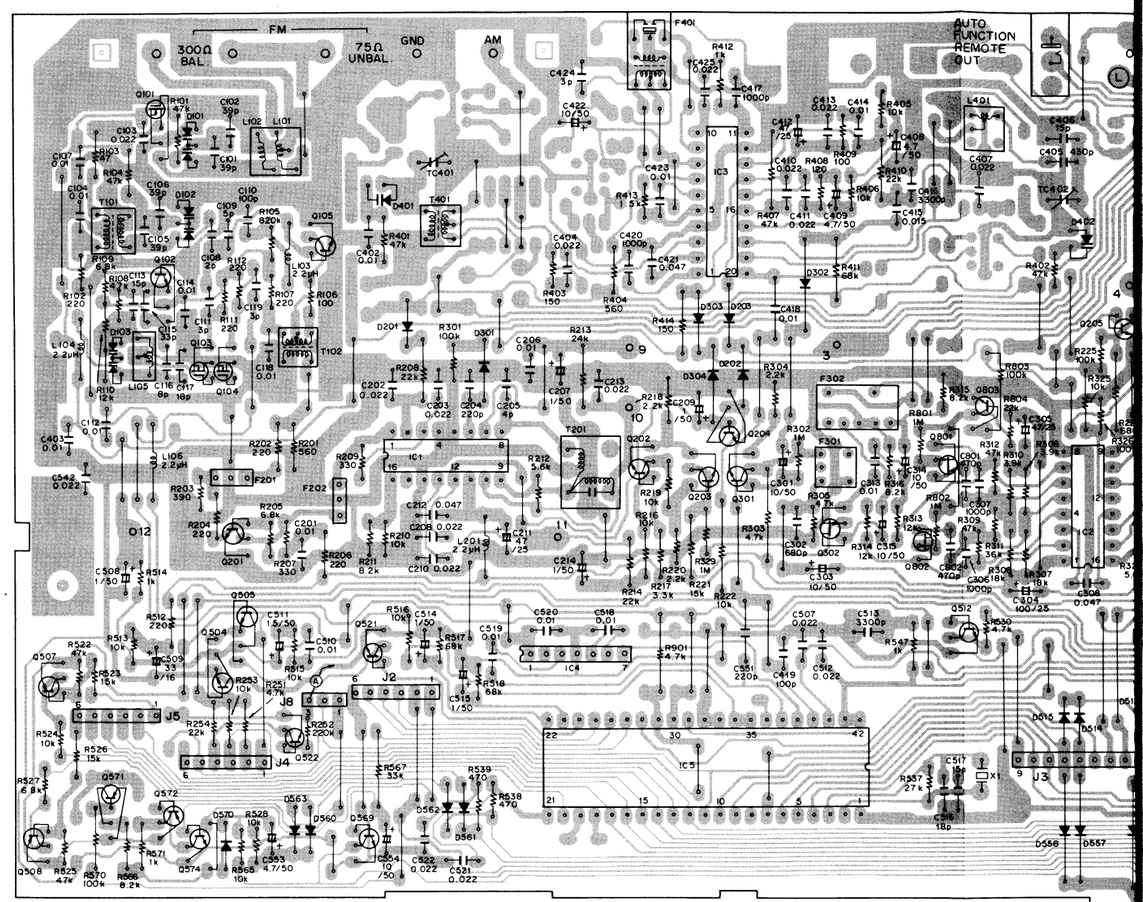
Mark	Symbol & Description	Part No. F-X700/KU	Part No. F-X700/S	Part No. F-X700/S/G	Remarks
⚠	Power cord	ADG-088	ADG-060	ADG-060	
	Complex assembly	GWM-390	GWM-391	GWM-391	
	Operating instructions	...	ARC-080	...	
	Screw	...	MTZ3-P100FXK	MTZ30P100FZK	

Complex Assembly (GWM-391)

The complex assembly GWM-391 (for S and S/G types) are the same as the GWM-390 (for KU type) with the exception of the following sections.

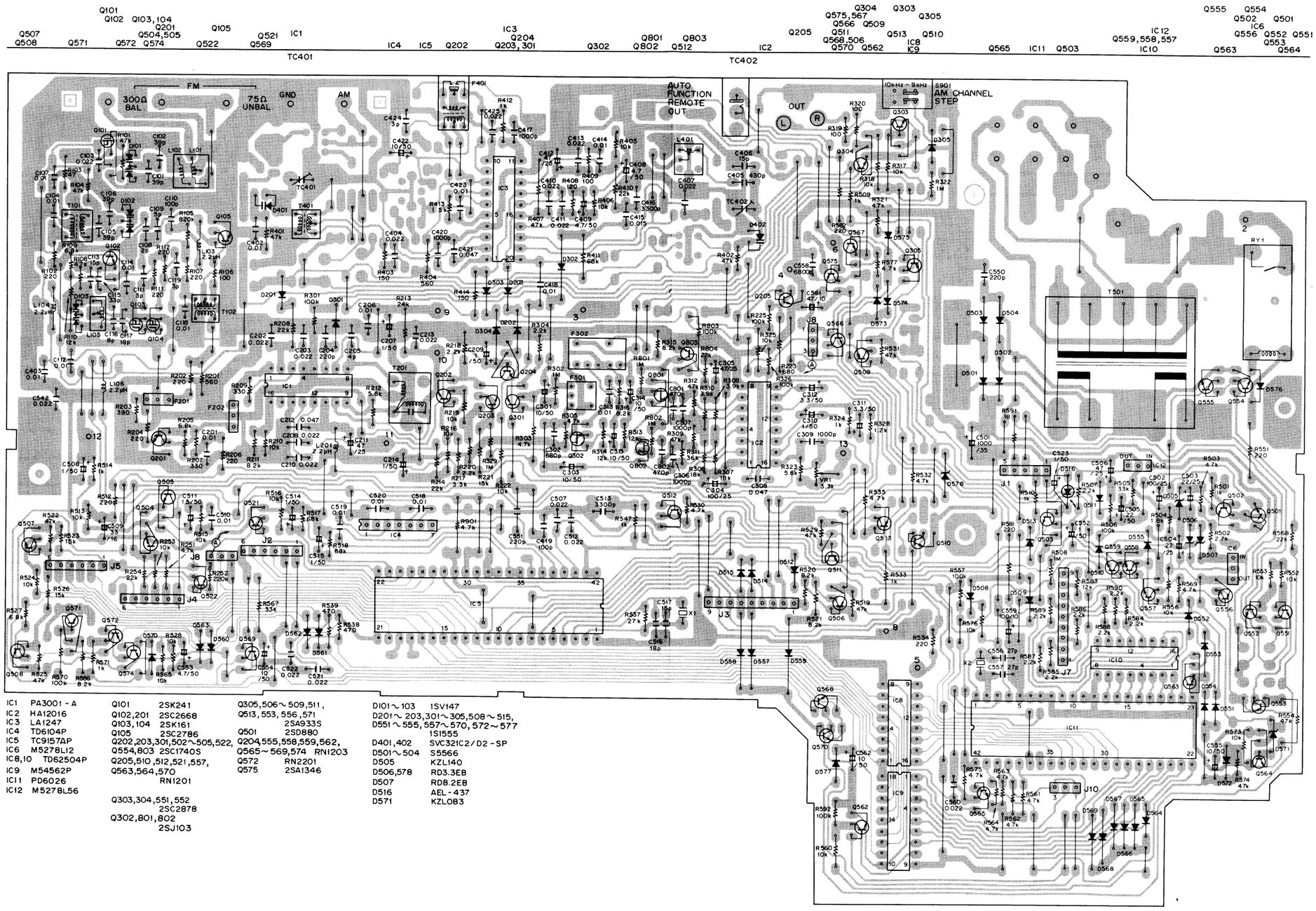
Mark	Symbol & Description	Part No. GWM-390	Part No. GWM-391	Remarks
★★	Q521	...	RN1201	
★★	Q522, Q803	...	2SC1740S	
★★	Q801, Q802	...	2SJ103	
⚠ ★★	S951	...	AKX-505	
⚠ ★	T501	ATS-173	ATS-174	
	C304	CEA101M25L	...	
	R213	RD1/8PM153J	RD1/8PM243J	
	R910	ACN-140	...	
	R251, R254	...	RD1/8PM103J	
	R803	...	RE1/8PM104J	
	R801, R802	...	RD1/8PM105J	
	R253, R804	...	RD1/8PM223J	
	R252	...	RD1/8PM224J	

COMPLEX ASSEMBLY(GWM-391)



IC1	PA3001-A	Q101	2SK241	Q305,506～509,511, Q513,553,556,571	2SA933S
IC2	HA12016	Q102,201	2SC2668	Q501	2SD880
IC3	LA1247	Q103,104	2SK161	Q204,555,558,559,562, Q565～569,574	RN1203
IC4	TD6104P	Q105	2SC2786	Q572	RN2201
IC5	TC9157AP	Q202,203,301,502～505,522, Q554,803	2SC1740S	Q575	2SA1346
IC6	M5278L12	Q205,510,512,521,557, Q563,564,570	RN1201	D101～103	1SV147
IC8,10	TD62504P	Q303,304,551,552	2SC2878	D201～203,301～305,508～515, D551～555,557～570,572～577	1SI555
IC9	M54562P	Q302,801,802	2SJ103	D401,402	SVC321C2/D2-SP
IC11	PD6026			D501～504	S5566
IC12	M5278L56			D505	KZL140
				D506,578	RD3.3EB
				D507	RD8.2EB
				D516	AEL-437
				D571	KZL083

COMPLEX ASSEMBLY(GWM-391)

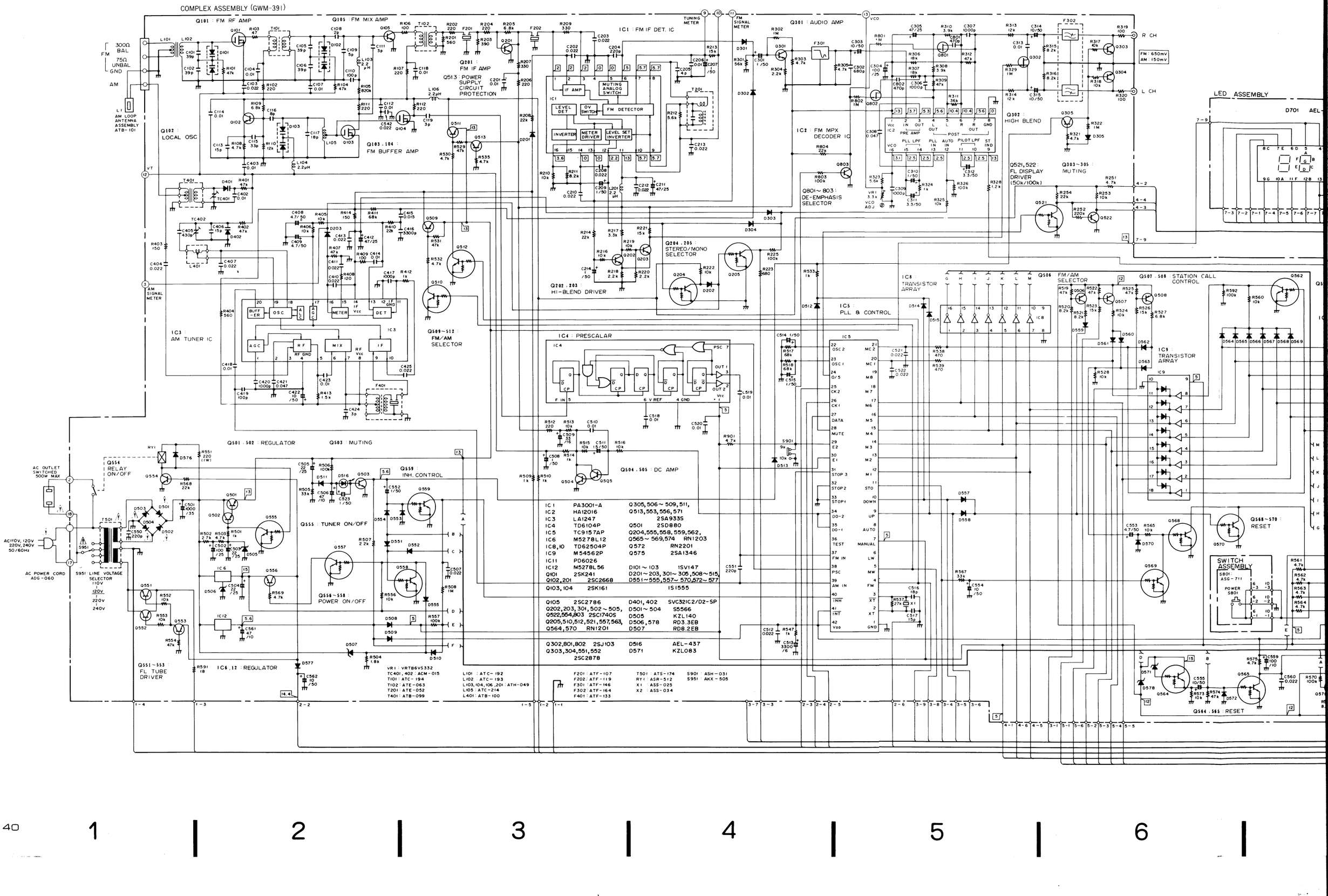


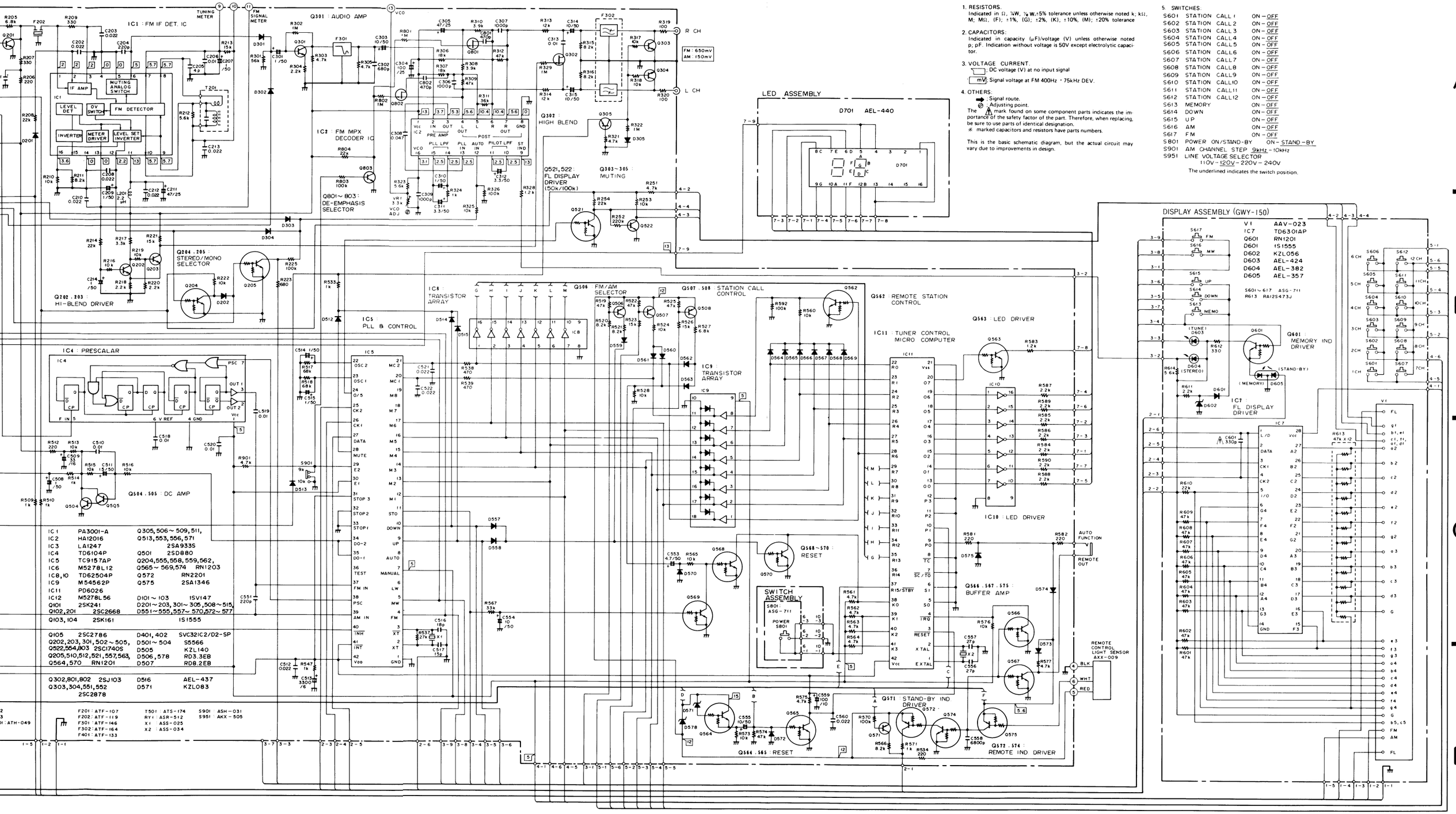
IC1 PA3001 - A
IC2 HA12016
IC3 LA1247
IC4 TD6104P
IC5 TC91S72AP
IC6 M5278L12
IC8,10 TD62504P
IC9 M54562P
IC11 PD6026
IC12 M5278L56

Q101 2SK241
Q102,201 2SC2668
Q103,104 2SK161
Q105 2SC2786
Q202,203,301,502～505,522, Q554,603 2SC1740S
Q205,510,512,521,557, Q563,564,570 RN1201
Q303,304,551,552 2SC2878
Q302,801,802 2SJ103
Q305,506～509,511, Q513,553,556,571 2SA933S
Q501 2SD880
Q204,555,558,559,562, Q565～569,574 RN1203
Q572 RN2201
Q575 2SA1346

D101～103 1SV147
D201～203,301～305,508～515, D551～555,557～570,572～577 1SI555
D401,402 SVC321C2/D2-SP
D501～504 S5566
D505 KZL140
D506,578 RD3.3EB
D507 RD8.2EB
D516 AEL-437
D571 KZL083

Schematic Diagram for S and S/G Types





1. RESISTORS.
Indicated in Ω, ¼W, ⅛ W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K), ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT.
: DC voltage (V) at no input signal
mV : Signal voltage at FM 400Hz • 75kHz DEV.

4. OTHERS:
: Signal route.
: Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES.

S601	STATION CALL 1	ON – OFF
S602	STATION CALL 2	ON – OFF
S603	STATION CALL 3	ON – OFF
S604	STATION CALL 4	ON – OFF
S605	STATION CALL 5	ON – OFF
S606	STATION CALL 6	ON – OFF
S607	STATION CALL 7	ON – OFF
S608	STATION CALL 8	ON – OFF
S609	STATION CALL 9	ON – OFF
S610	STATION CALL10	ON – OFF
S611	STATION CALL11	ON – OFF
S612	STATION CALL12	ON – OFF
S613	MEMORY	ON – OFF
S614	DOWN	ON – OFF
S615	UP	ON – OFF
S616	AM	ON – OFF
S617	FM	ON – OFF
S801	POWER ON/STAND-BY	ON – STAND-BY
S901	AM CHANNEL STEP 9kHz – 10kHz	
S951	LINE VOLTAGE SELECTOR 110V – 120V – 220V – 240V	

The underlined indicates the switch position.

14. FOR HE AND HB TYPES

The F-X700L/HE and F-X700L/HB are the same as the F-X700/KU with the exception of the following sections.

Contrast of Miscellaneous Parts

Mark	Symbol & Description	Part No. F-X700/KU	Part No. F-X700L/HE	Part No. F-X700L/HB	Remarks
⚠	AC Power cord	ADG-088	ADG-068	ADG-063	
⚠ ★★	Fuse	...	AEK-401	AEK-401	
⚠ ★★	Fuse	...	AEK-403	AEK-403	
⚠	AC socket (AC OUTLET)	AKP-507	AKP-508	AKP-509	
	Complex assembly	GWM-390	GWM-392	GWM-392	
	Display assembly	GWY-150	GWY-152	GWY-152	
	Packing case	AHE-465	AHE-464	AHE-464	
	Front panel assembly	ANM-739	ANM-864	ANM-864	
	Operating instructions (English)	ARB-641	...	ARB-640	
	Operating instructions (English/French/German/ Italian)	...	ARE-119	...	

Display Assembly (GWY-152)

The display assembly GWY-152 (for HE and HB types) is the same as the GWY-150 (for KU type) with the exception of the following section.

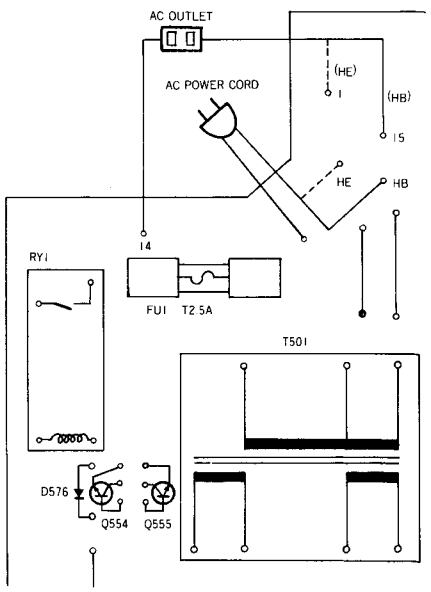
Mark	Symbol & Description	Part No. GWY-150	Part No. GWY-152	Remarks
★★	S618	...	ASG-711	

Line Voltage Selection

Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the connection of the complex assembly (GWM-392) primary pins.
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

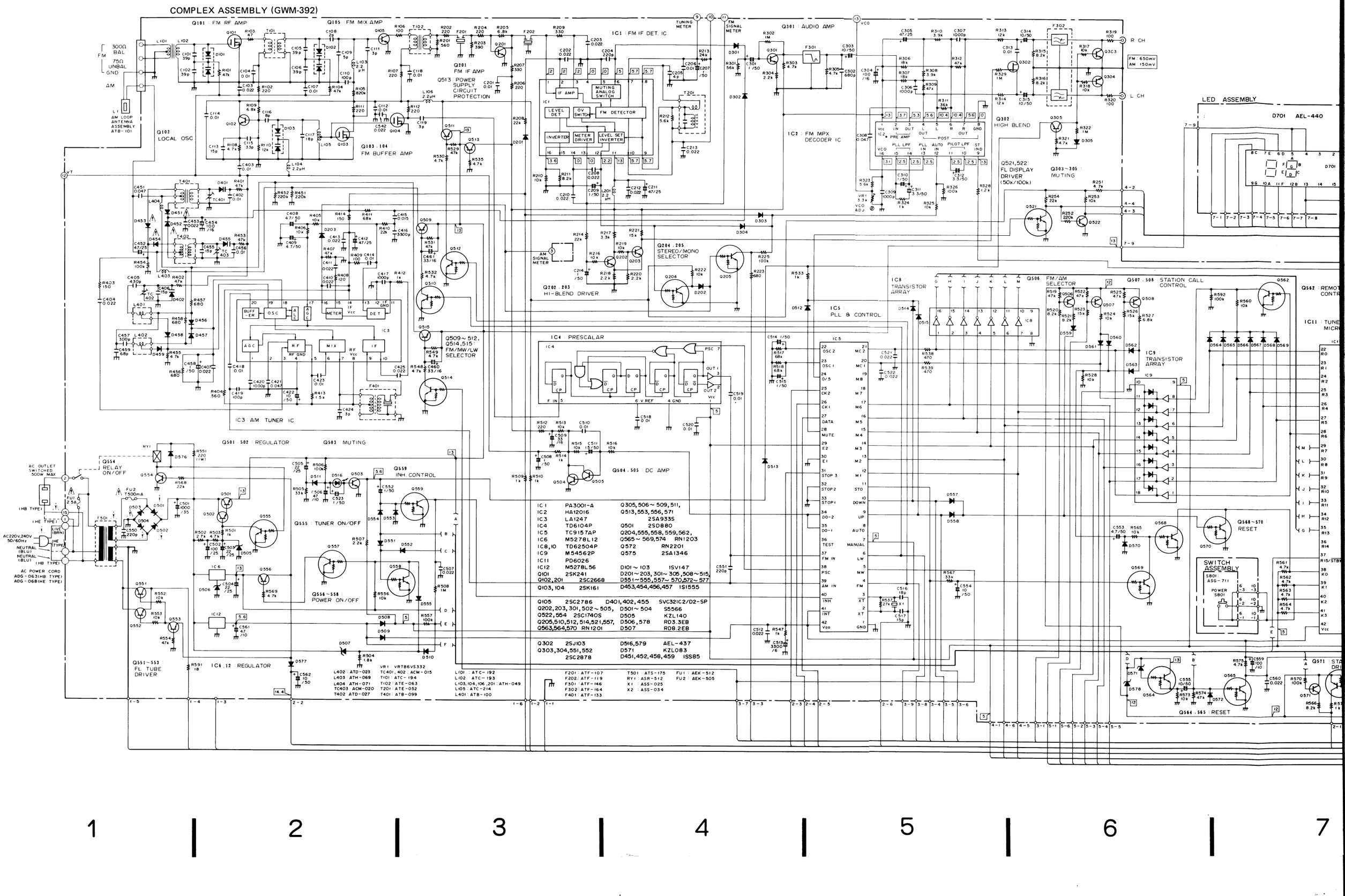


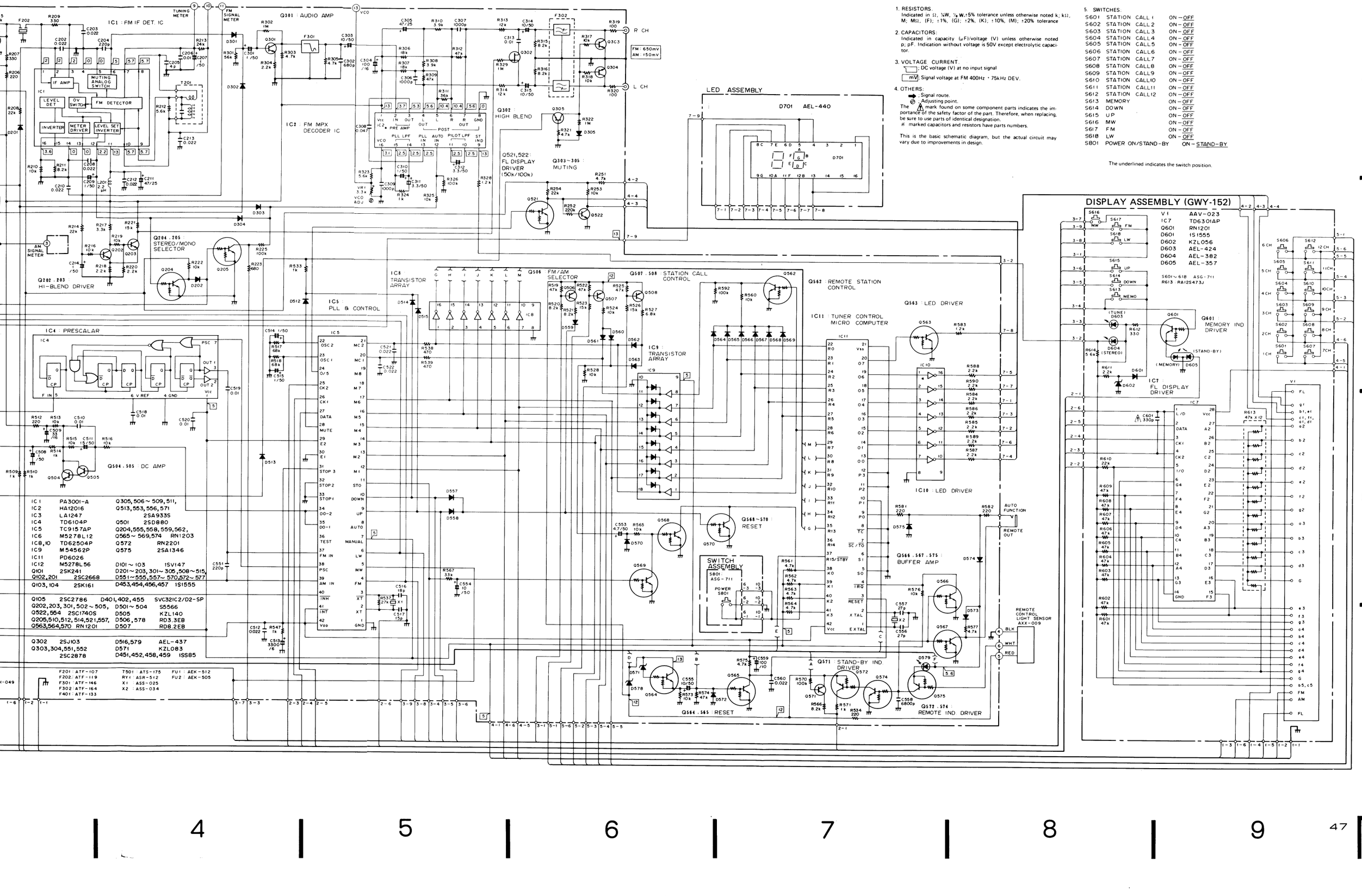
Complex Assembly (GWM-392)

The complex assembly GWM-392 (for HE and HB types) is the same as the GWM-390 (for KU type) with the exception of the following sections.

Mark	Symbol & Description	Part No. GWM-390	Part No. GWM-392	Remarks
★★	Q514, Q521	...	RN1201	
★★	Q515	...	2SA933S	
★★	Q522	...	2SC1740S	
★	D401, D402	SVC321C2/D2	SVC321C3/D3	
★	D451, D452, D458, D459	...	1SS85	
★	D453, D454, D456, D457	...	1S1555	
★	D455	...	SVC321C3/D3	
★	D579	...	AEL-437	
★★	S901	ASH-031	VACANT	
	L402	...	ATD-023	
	L403	...	ATH-069	
	L404	...	ATH-071	
★	T402	...	ATD-027	
⚠ ★	T501	ATS-173	ATS-175	
	TC403	...	ACM-020	
	C304	CEA101M25L	CEA101M16L	
	C306, C307	CQMA152J50	CQMA102J50	
	C451	...	CKDYF473Z50	
	C452	...	CEA470M25L	
	C453	...	CKDYF223Z50	
	C454	...	CEA101M16L	
	C455	...	CCDCH150J50	
	C456	...	CKDYF103Z50	
	C457	...	CQSA301J50	
	C458	...	CEA010M50L	
	C459	...	CCDCH680J50	
	C460, C461	...	CEA330M16L	
	R213	RD1/8PM153J	RD1/8PM243J	
	R251 – R254, R451 – R458, R548, R549	...	RD1/8PM □□□J	
	Terminal (ANTENNA)	AKA-017	AKA-018	

Schematic Diagram for HE and HB Types




IC1 : FM IF DET. IC
IC2 : FM MPX DECODER IC
Q301 : AUDIO AMP
Q302 : HIGH BLEND
Q303~305 : MUTING
Q521,522 : FL DISPLAY DRIVER (50k/100k)
Q202 . 203 : HI-BLEND DRIVER
Q204 . 205 : STEREO/MONO SELECTOR
Q504 . 505 : DC AMP
IC4 : PRESCALAR
IC5 : PLL & CONTROL
IC8 : TRANSISTOR ARRAY
IC9 : TRANSISTOR ARRAY
Q506 : FM/AM SELECTOR
Q507 . 508 : STATION CALL CONTROL
Q562 : REMOTE STATION CONTROL
IC11 : TUNER CONTROL MICRO COMPUTER
Q563 : LED DRIVER
IC10 : LED DRIVER
Q566 . 567 . 575 : BUFFER AMP
Q564 . 565 : RESET
Q568~570 : RESET
Q571 : STAND-BY IND DRIVER
Q572 . 574 : REMOTE IND DRIVER
SWITCH ASSEMBLY
S801 : ASG-711
LED ASSEMBLY
D701 AEL-440
DISPLAY ASSEMBLY (GWY-152)
IC7 : FL DISPLAY DRIVER
Q601 : MEMORY IND DRIVER
REMOTE CONTROL LIGHT SENSOR AXX-009
AUTO FUNCTION
REMOTE OUT
R-CH
L-CH
FM : 650mV
AM : 150mV

IC1	PA3001-A	Q305,506~509,511,	
IC2	HA12016	Q513,553,556,571	
IC3	LA1247		2SA933S
IC4	TD6104P	Q501	2SD880
IC5	TC9157AP	Q204,555,558,559,562,	
IC6	M5278L12	Q565~569,574	RN1203
IC8,10	TD62504P	Q572	RN2201
IC9	M54562P	Q575	2SA1346
IC11	PD6026		
IC12	M5278L56	D101~103	1SV147
Q101	2SK241	D201~203, 301~305, 508~515,	
Q102,201	2SC2668	D551~555, 557~570, 572~577	
Q103,104	2SK161	D453,454,456,457	1S1555
Q105	2SC2786	D401,402,455	SVC321C2/D2-SP
Q202,203,301,502~505,		D501~504	S5566
Q522,554	2SC1740S	D505	KZL140
Q205,510,512,514,521,557,		D506,578	RD3.3EB
Q563,564,570	RN1201	D507	RD8.2EB
Q302	2SJ103	D516,579	AEL-437
Q303,304,551,552		D571	KZL083
	2SC2878	D451,452,458,459	1SS85

F201 : ATF-107
F202 : ATF-119
F301 : ATF-146
F302 : ATF-164
F401 : ATF-133
T501 : ATS-175
RY1 : ASR-512
X1 : ASS-025
X2 : ASS-034
FU1 : AEK-512
FU2 : AEK-505

1. RESISTORS:
Indicated in Ω, ¼W, ⅛W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT:
; DC voltage (V) at no input signal
mV; Signal voltage at FM 400Hz · 75kHz DEV.

4. OTHERS:
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES:

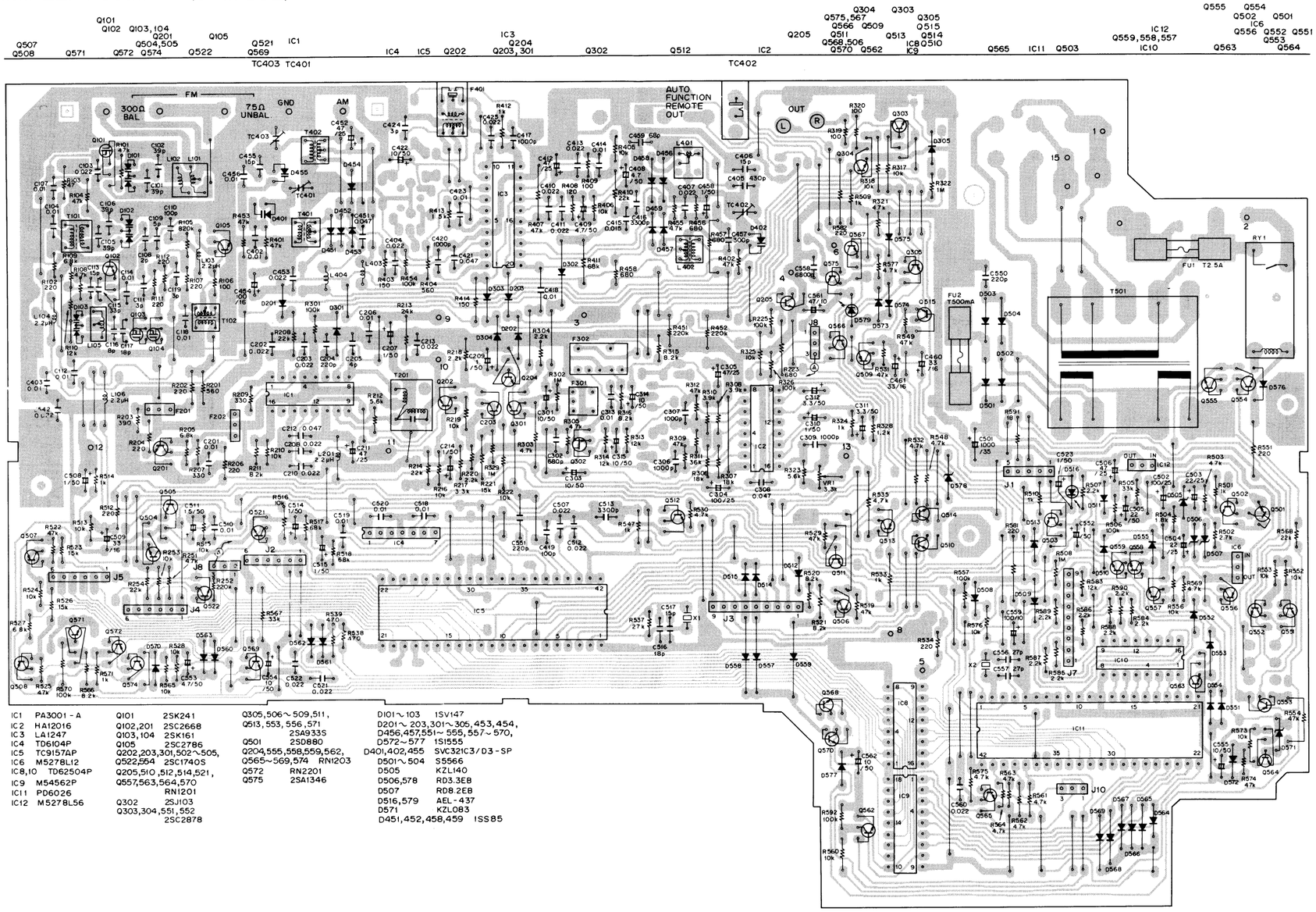
S601	STATION CALL 1	ON – OFF	
S602	STATION CALL 2	ON – OFF	
S603	STATION CALL 3	ON – OFF	
S604	STATION CALL 4	ON – OFF	
S605	STATION CALL 5	ON – OFF	
S606	STATION CALL 6	ON – OFF	
S607	STATION CALL 7	ON – OFF	
S608	STATION CALL 8	ON – OFF	
S609	STATION CALL 9	ON – OFF	
S610	STATION CALL 10	ON – OFF	
S611	STATION CALL 11	ON – OFF	
S612	STATION CALL 12	ON – OFF	
S613	MEMORY	ON – OFF	
S614	DOWN	ON – OFF	
S615	UP	ON – OFF	
S616	MW	ON – OFF	
S617	FM	ON – OFF	
S618	LW	ON – OFF	
S801	POWER ON/STAND-BY	ON – STAND-BY	

The underlined indicates the switch position.

V1	AAV-023
IC7	TD6301AP
Q601	RN1201
D601	1S1555
D602	KZL056
D603	AEL-424
D604	AEL-382
D605	AEL-357

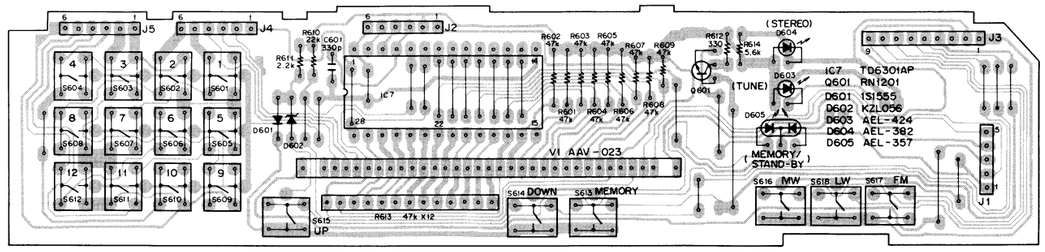
S601~618 ASG-711
R613 : RA12S473J

COMPLEX ASSEMBLY(GWM-392)



IC1	PA3001 - A	Q101	2SK241	Q305,506～509,511, Q513,553,556,571	2SA933S
IC2	HA12016	Q102,201	2SC2668	Q501	2SD880
IC3	LA1247	Q103,104	2SK161	Q204,555,558,559,562, Q565～569,574	RN1203
IC4	TD6104P	Q105	2SC2786	Q572	RN2201
IC5	TC9157AP	Q202,203,301,502～505, Q522,554	2SC1740S	Q575	2SA1346
IC6	M5278L12	Q205,510,512,514,521, Q557,563,564,570	RN1201	D101～103	1SV147
IC8,10	TD62504P	Q302	2SJ103	D201～203,301～305,453,454, D456,457,551～555,557～570, D572～577	1SI555
IC9	M54562P	Q303,304,551,552	2SC2878	D401,402,455	SVC321C3/D3-SP
IC11	PD6026			D501～504	S5566
IC12	M5278L56			D505	KZL140
				D506,578	RD3.3EB
				D507	RD8.2EB
				D516,579	AEL-437
				D571	KZL083
				D451,452,458,459	1SS85

DISPLAY ASSEMBLY(GWY-152)



IC7	TD6301AP
Q601	RN1201
D601	1SI555
D602	KZL056
D603	AEL-424
D604	AEL-382
D605	AEL-357

ADDITIONAL

Service Manual

PIONEER®

W02

ORDER NO.
ARP-656-0

FM/AM DIGITAL SYNTHESIZED TUNER

F-X700 NEZ

- **For servicing this type, please refer to the F-X700 service manual (ARP-654) with the exception of this additional service manual.**
- **This additional service manual is applicable to the NEZ type.**

SPECIFICATIONS

The specifications for the model F-X700/NEZ are the same as the model F-X700/KU except for the following sections:

FM Tuner Section

Sensitivity (DIN) ..... Mono: 0.9μV/75Ω
Stereo: 31.5μV/75Ω

MW Tuner Section

Frequency range ..... 531kHz to 1602kHz
Sensitivity 250μV/m

Miscellaneous

Power Requirements ... a.c. 220V , 50/60Hz

Furnished Parts

Broadcast list 1
Adaptor plug 1

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
TEL: [800] 421-1404, [800] 237-0424
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775·28·08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: [03] 580-9911

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PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 ..... RD¼PS 5 6 1*	*J*
47kΩ	*47 × 10³*	*473 ..... RD¼PS 4 7 3*	*J*
0.5Ω	*0R5*	*..... RN2H 0 R 5*	*K*
1Ω	*010*	*..... RS1P 0 1 0*	*K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 .... RN¼SR 5 6 2 1*	*F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*

  ★★ GENERALLY MOVES FASTER THAN ★

  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Contrast of Miscellaneous Parts

Mark	Symbol & Description	Part No. F-X700/KU	Part No. F-X700/HEZ	Remarks
	Complex assembly	GWM-390	GWM-393	
	Connector socket (FM 75Ω)	...	AKX-206	
	Coaxial connector	...	AKX-090	
	Nut (M12)	...	NKX2FNI	
	Washer	...	WAX3F176N050	
⚠	Power cord	ADG-088	ADG-094	
⚠ ★★	Fuse (FU1 T2.5A)	...	AEK-403	
⚠ ★★	Fuse (FU2 T400mA)	...	AEK-407	
⚠	AC socket (OUTLET)	AKP-507	AKP-508	
	Bonnet case	ANE-514	ANE-560	
	Operating instructions (English)	ARB-641	...	
	Operating instructions (German)	...	ARC-085	

FE Assembly (AWB-060) (on the GWM-393)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	Q102	2SC2668
★★	Q105	2SC2786-L
★★	Q103, Q104	2SK241-Y
★★	Q101	2SK241-Y
★★	D101 – D104	1SV147

TRANSFORMERS AND COILS

Mark	Symbol & Description		Part No.
	T101	FM RF transformer	ATC-194
	T102	FM coupling transformer	ATE-063
	L101	FM ANT coil	ATC-192
	L104	FM OSC coil	ATC-214
	L103	FM RF coil	ATC-247
	L102	FM tuning coil	ATC-248
	L105, L106	Inductor	ATH-049

CAPACITORS

Mark	Symbol & Description		Part No.
	TC101	Ceramic trimmer	ACM-014
	C115		CCDCH080D50
	C113		CCDCH150J50
	C114		CCDCH330J50
	C101		CCDRH100D50
	C105		CCDRH330J50
	C102, C104, C106		CCDRH390J50
	C110		CCDSL010C50
	C108, C109		CCDSL020C50
	C117		CCDSL050C50
	C111		CCDSL101J50
	C116		CCDTH180J50
	C103, C112, C118, C119		CKDYF103Z50
	C107		CKDYF223Z50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R101 – R113	PD1/8PM □□J

Complex Assembly (GWM-393)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC2	HA12016
★★	IC3	LA1247
★★	IC6	M5278L12
★★	IC12	M5278L56
★★	IC9	M54562P
★★	IC1	PA3001-A
★★	IC11	PD6026A
★★	IC5	TC9157AP
★★	IC4	TD6104P
★★	IC8, IC10	TD62504P
★★	Q205, Q510, Q512, Q521, Q557, Q563, Q564, Q570	RN1201 (DTC143ES)
★★	Q204, Q555, Q558, Q559, Q562, Q565 – Q569, Q574	RN1203 (DTC124ES) (2SC3400)
★★	Q572	RN2201 (DTA143ES)
★★	Q575	2SA1346 (DTA124ES) (RN2203)
★★	Q305, Q506 – Q509, Q511, Q513, Q553, Q571	2SA933S (JA101) (2SA1048) (2SA1115)
★★	Q556	2SA933S (2SA1115)
★★	Q202, Q203, Q301, Q502 – Q505, Q522, Q554	2SC1740S (JC501) (2SC2458) (2SC2603)
★★	Q201	2SC2668
★★	Q303, Q304, Q551, Q552	2SC2878
★★	Q501	2SD880 (2SD313)
★★	Q302	2SJ103
★	D516	AEL-437
★	D571	KZL083
★	D505	KZL140
★	D506, D578	RD3.3EB (HZ3.3EB)
★	D507	RD8.2EB (HZ8.2EB)
★	D401, D402	SVC321C2/D2
⚠ ★	D501 – D504	S5566 (11E2)
★	D201 – D203, D301 – D305, D508 – D515, D551 – D555, D557 – D570, D572 – D577	1S1555 (US1035)

SWITCH AND RELAY

Mark	Symbol & Description	Part No.
★★	RY1	ASR-512

TRANSFORMERS AND COILS

Mark	Symbol & Description		Part No.
★	T201	FM DET transformer	ATE-052
★	T401	AM ANT transformer	ATB-099
⚠ ★	T501	Power transformer	ATS-175
	L106, L201	Inductor	ATH-049
	L401	AM OSC coil	ATB-100
	L501	Line filter	ATF-163
	F201	FM ceramic filter	ATF-107
	F202	FM ceramic filter	ATF-119
	F301	Beat eliminate filter	ATF-146
	F302	Low pass filter	ATF-164
	F401	AM ceramic filter	ATF-133

CAPACITORS

Mark	Symbol & Description	Part No.
	TC401, TC402	ACM-015
	C424	CCDCH030C50
	C205	CCDCH040C50
	C406, C517	CCDCH150J50
	C516	CCDCH180J50
	C556, C557	CCDCH270J50
	C204	CCDSL221J50
	C419	CCDSL470J50
	C551	CCPSL270J50
	C513	CEAS332M6
	C207, C209, C214, C301, C310, C508, C514, C515, C523, C552	CEA010M50L
	C511	CEA1R5M50L
	C303, C314, C315, C422, C554, C555, C562	CEA100M50L
	C559	CEA101M10L
	C304, C502	CEA101M25L
	C501	CEA102M35L
	C503, C504, C505	CEA220M25L
	C311, C312	CEA3R3M50L
	C509	CEA330M16L
	C408, C409, C553	CEA4R7M50L
	C506, C561	CEA470M10L
	C211, C305, C412	CEA470M25L
	C417, C420	CKDYB102K50
	C416	CKDYB332K50
	C563	CKDYB472K50
	C302	CKDYB681K50
	C558	CKDYB682K50
	C201, C206, C313, C402, C414, C423,	CKDYF103Z50
	C510, C518 – C520	
	C202, C203, C208, C210, C213, C404, C407, C410, C411, C413, C425, C507, C512, C521, C522, C542, C550, C560	CKDYF223Z50
	C308, C421	CKDYF473Z50
	C212	CKDYX473M25
	C418	CKPYX103M25
	C306, C307	CQMA102J50
	C415	CQMA153J50
	C309	CQSA102J50
	C405	CQSA431J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description		Part No.
★	VR1	Semi-fixed (3.3k)	VRTB6VS332
	R414	Carbon composition	RD1/4PM151J
	R551		RS1LMF221J
	Other resistors		RD1/8PM □□□J

OTHERS

Mark	Symbol & Description		Part No.
	X1	X'tal resonator	ASS-025
	X2	Caramic resonator	ASS-034
	Terminal (ANTENNA)		AKA-023
	Terminal (OUTPUT)		AKB-093
	Screw		PBZ30P060FMC
	Terminal (AUTO FUNCTION)		AKN-034
	FE assembly		AWB-060

Switch Assembly

SWITCH

Mark	Symbol & Description		Part No.
★★	S801	Tact switch	ASG-711 (ASG-703)

Display Assembly (GWY-150)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC7	TD6301AP
★★	Q601	RN1201 (DTC143ES)
★	D605	AEL-357
★	D604	AEL-382
★	D603	AEL-424
★	D602	KZL056
★	D601	1S1555 (US1035)

SWITCHES

Mark	Symbol & Description	Part No.
★★	S601 – S617	ASG-711 (ASG-703)

CAPACITORS

Mark	Symbol & Description	Part no.
⚠	C601	CKDYB331K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	R613	RA12S473J
★	Other resistors	RD1/8PM □□□J

OTHER

Mark	Symbol & Description	Part No.
★	Fluorescent tube	AAV-023

LED Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★	D701	AEL-440

Transmitter Assembly

SEMICONDUCTORS

Mark	Symbol & Description		Part No.
★★	IC1		μPD6102G
★★	Q01		2SC2021
★★	Q02		2SC1652
★	D01	LED	AZE-001
★	D02, D03	LED	AEL-389
★	D04 – D08		1S1555

SWITCHES AND OTHERS

Mark	Symbol & Description		Part No.
★★	S01 – S12, S17 – S19, S21 – S25, S29, S31 – S39, S45	Tact switch	ASG-711
	X01	Ceramic resonator	AZS-001
		Terminal (A)	AZK-001
		Terminal (B)	AZK-002

CAPACITORS

Mark	Symbol & Description	Part No.
	C01	CEA101M6L
	C02, C03	CCDCH1O1J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R01 – R06	RD1/4PM □□□J